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UK govt agrees to legislate

Go-ahead for privacy law

by Rory Johnston

DECISION has finally been made by the government to go ahead with legislation on data protection, after a year and a half's pondering of the issue. Although an official announcement has yet to be made, the government's representative at the Council of Europe has agreed to the passing of a convention which will require all its signatories to have such legislation.

Briefing

NCR buys 68000 rights

NCR has bought the manufacturing rights for Motorola's 68000 32 bit microprocessor and its peripherals, and intends to use them in future terminals and computers. At present, it uses Intel's 8080 in 8-bit systems like the NCR 100 business computer. The agreement, which lasts for five years, means that NCR is the second major computer manufacturer to commit itself to a specific 32-bit microprocessor. Olivetti is the first with the 28000.

Services group

REFLECTING Dr Chris Wilson's commitment to a disproportionately rapid growth of ICL's services business, he has formed a new Services Group within the company under R. V. Holley. The new group will comprise the Basic Bureau, Dataskil software house and education and training services.

St Gobain plans

WITH effective control of CIT-Honeywell Bull and 23% of Olivetti, St Gobain Pont à Mousson now wants to take over Jeumont Schneider's digital private telephone exchange business. Jeumont Schneider was a European pioneer of digital switching.

Redifon chief quits

LEADING light in the Redifon organisation for many years, Ruff Keyes has stepped down after only about eight months as managing director of Redifon Computer Machinery Corp, the firm set up after the acquisition of CMC Europe by Redifon's parent, Redifusion. Keyes' successor is Derek Young, deputy managing director of Redifon Simulation.

IBM defends

COPES of a settlement in the US government's anti-trust case against IBM have faded. The indefatigable suit resumes in New York in December with IBM continuing its defence.

Micro prizes

THE Department of Industry's microprocessor for schools competition attracted 650 top quality entries, and over 100 schools which entered the "How we would use a computer" contest will be awarded microcomputers in a few weeks.

The Committee of Ministers of the Council of Europe, made up of the foreign ministers of the Council's 21 member States, has approved the convention on data protection without dissension. Member States will be asked formally to sign the convention on January 28, indicating their intention to ratify the convention by legislation.

The Home Office is refusing to comment in advance of the statement from Home Secretary William Whitelaw promised for later this autumn. However Donald Cape, Lord Carrington's permanent representative on the Council of Europe's Committee of Ministers, voted in favour of approving the convention.

The convention aims to remove obstacles to the free passage of data between participating countries by encouraging them to trust each other's provisions for data protection. It specifically requires that a country must have legislation in force before it can ratify, but what form that legislation must take it does not lay down.

Instead a set of principles to be followed is set out, including a right of subject access to files, rectification of mistakes, and publication of the existence of files.

Dr Frits Hondius of the Council's staff admitted that disagreement over whether the principles are being followed is possible; the convention is relying on voluntary co-operation in this regard. He could not envisage any mechanism that could settle disputes, but was confident that countries would not make empty promises.

The thorny issue of whether organisations ("legal persons")

Yellow Book at SW Univ

THE controversial "Yellow Book" Transport Service protocol, developed by the PSS User Forum for use on public data networks (CW, September 4), has been implemented on the South West Universities Computer Network.

The protocol has been implemented on top of manufacturer supplied X25 packet switching software in the Honeywell Level 68 Multics system at the Avon Universities Computer Centre and in the GEC 4085 which is used as a network interface processor by the South West Universities Regional Computer Centre.

The "Blue Book" network independent File Transfer Protocol developed by the PSS User Forum has also been implemented on the network, as well as a locally designed Job Transfer protocol.

The Yellow Book protocol has been proposed as an interim standard for the fourth layer of the ISO seven layer open systems intercon-

nection model adopted by ICL and CIT-Honeywell Bull for their network architectures. However both companies are backing a rival ECMA standard for the transport service.

US Bill stalled

MANUFACTURERS, service companies and newspapers could succeed in their bid to kill the Telecommunications Bill 1980, which if passed would free AT&T to compete in the US computer services market.

The Bill has passed the House of Representatives Commerce Committee but is stalled in the Senate Commerce Committee and the House Monopolies Subcommittee.

Opponents fear that AT&T will subsidise its free market computer business from its monopoly telephone services.

Anglia, which created a stir when it went to Honeywell rather than ICL for a mainframe system, was threatened with legal action by Comart earlier this year when it tried to cancel an order for 19 microcomputers because of the troublesome union talks.

Nalco confirmed that agreement was near.

INSIDE THIS WEEK'S CW...

DATA ANALYSIS

Following the successful Advanced File Handling series Computer Weekly's new series is designed to equip you with the skills needed to analyse and organise data. Data Analysts will deal with the subject in 27 steps, split into two parts. Part one starts today on page 18.

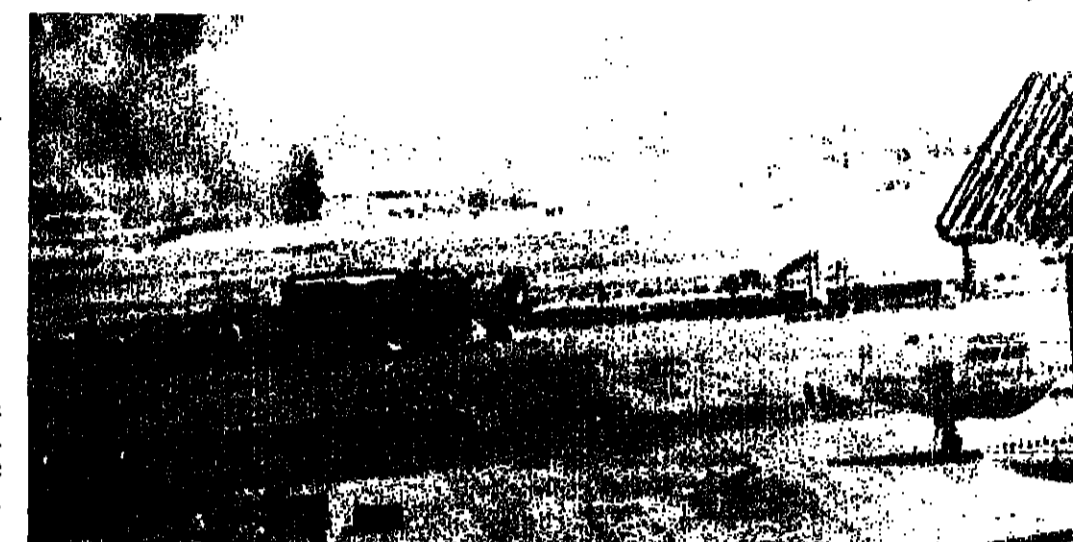
ALSO...

Computerview... 2
Letters to the Editor... 2

Office battle... 3
Conference row settled... 5
Page for programmers... 6
Software file... 7
Micro News from Santa Clara... 7
Op Spot... 8
Company News... 12
Mithras Privatise... 12
People and Events... 14
Computers on car line... 16/17
AT&T for DP market... 22/23
Word processing review... 22/23
The Sales Bit... 25
Prize Crossword... 46
Law and computer fraud... 48

JOB OPPORTUNITIES: PAGES 28-47

LOGICA MAN ESCAPES FROM IRAQ



AS the Iran-Iraq conflict broke out, Logica consultant Shaun O'Byrne found himself too near the fighting for comfort. It took at first as if Shaun's trip to the Middle East would be just another assignment as he took off on Friday September 19.

But as he sat in Baghdad Airport watching Iraqi MIGs taking off to bomb Tehran, with results shown above, he watched commercial flights out being cancelled one by one. He was lucky to be on the last plane out. His report is on page 15.

Three bid for Bunzl bureau

ALLEN Computers International, which operates a bureau service based on Digital Equipment PDP-11/70s, wants to take over the bureau side of Bunzl Data Systems following the decision by Bunzl Pulp and Paper to drop out of the computer services business.

Bunzl said that it had received no offer in writing yet from ACI, and that at the moment there were only two serious bidders, John O'Connell, boss of the ill-fated BDS, and another unnamed party. ACI operates similar Digital Equipment PDP-11/70 kit to the BDS bureau and the firm's boss, David Allen, said that he was already talking to BDS customers about taking over their work. Like the BDS bureau operation ACI's bureau is based in central London and ACI's aim is to run the two in parallel.

ICL reshapes its foreign business

ICL's determination to get its North American operations right, but France is clearly ahead this year. ME29 sales there are double the target for the first six months in both volume and value and a remarkable two-thirds have come from outside the ICL customer base, the principal victims being IBM with System 3 users, and CIT-Honeywell Bull with Level 61.

Between 55 and 60 ME29s are on order in France and the first went in last month. The other countries coming under Les Cole are West Germany, where the ME29 has also been a star performer, and Australia.

Currency fluctuations determine

Anglia Water in union deal

AFTER extremely protracted union negotiations the Anglia Water Authority says that it is just a few weeks away from finalising a new technology agreement with its unions. They are led by the white collar union Nalco.

Anglia, which created a stir when it went to Honeywell rather than ICL for a mainframe system, was threatened with legal action by Comart earlier this year when it tried to cancel an order for 19 microcomputers because of the troublesome union talks.

Nalco confirmed that agreement was near.

Books sell faster when they're screened

To sharpen the service to their customers, Hammick's Bookshops, the fast-growing Hampshire-based wholesale and retail book sellers, installed a microcomputer holding details of their stock of 20,000 titles. Now display screens provide instant access to stock levels, best-selling titles and order details. The system enables Hammick's to provide same-day despatch for orders received before noon.

Data Logic supplied the Hewlett-Packard 3000 system under a turnkey contract. That meant system design, software development, hardware, and project management.

Our Professional Services Division has over 400 consultants, analysts and programmers. That's one of the UK's largest groups of computing expertise. Shouldn't we be talking?

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Downtime

by Chad

Drawing a veil over technology

MY colleagues at Sicob were giggling at the opening address given by Mme Simone Veil, president of the European Parliament. In place of all the usual gushing and Motherhood, Mme Veil took the opportunity to jolt everybody by thumping tubs and grinding axes. Unfortunately, she seemed to have got her script from the Guardian women's page.

Talking about office systems, she announced that these were used mainly by women but were chosen by men.

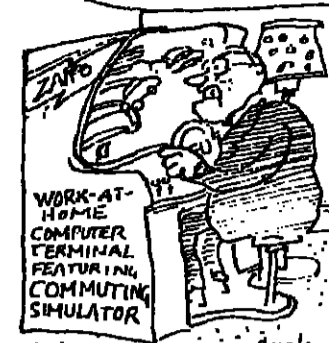
Oh, thought I, as I ran through in my mind all the best-known pundits in this field: Nunnally, Barkeley, Doris Lenson, Stieley Pickard, Emma Bird...

Then she asserted: "If the majority of interactions between people are conducted via machines, and machines with memories, we could end up with

an intolerable impoverishment of personal relations."

I spent some time trying to imagine what on earth she had in mind here. Then I thought: "Shame on you, Mme Veil! Don't you read Downtime? How about the American couple I wrote about last year who met each other and got engaged over a distance of 2,000 miles via terminal!"

Mme Veil exhibits the increasingly common mixtures of a



distrust of technology with a blind faith in its capabilities. She spent some time saying how much she would not want the simultaneous translators at the European Parliament replaced by machines.

She also worried about dehumanisation of our working lives by infallible systems of control. If you come across any infallible systems, please let us at CW know, will you Madam?

Compost Manufacturers and Suppliers

UK United Kingdom Ltd
10, Peter's Hill, Castle Market St, Norwich NR1 1AA

This is an entry from the current Norwich area Yellow Pages telephone directory. I trust it is not a comment by the Post Office.

Now automation takes over the spelling . . . or does it?

I LONG ago gave up trying to keep track of how many word processors there are on the market. It must be up to about 2,361 by now.

What is distressing is that it is becoming harder and harder to tell them apart, as the "What's new, Copycat?" syndrome takes over and all the suppliers end up with identical all-singing and dancing products.

You used to be able to spot the IBM machines because they were small and peculiar, and Xerox had a menagerie of control devices called mice and cats and things. Now even IBM has brought out a "normal" machine, and heaven help the poor OEM person who has to choose one of these things just to get his/her typing done.

What bugs me now is the latest trendy bell/whistle that everyone is rushing to add to their kit, namely the automatic spelling corrector, laughably so-called. It looks through your text to see which words are not in its dictionary of the English language, and

flags those that aren't on the assumption that they are mistakes. You then have to correct them, or assure the machine that you were quoting some Patagonian and that it was OK.

This is all fine and dandy, except that it fails to spot all those errors where another valid English word is produced. Thus it finds the unimportant mistakes and misses all the important if not libellous ones, such as where "now" comes out as "not", or "defective" as "defective", or "friend" as "fiend". So you have to go through and check every word anyway, and the fact that some of the mistakes have been removed already simply increases the monotony of the operation.

It also encourages you not to bother to check yourself, which will (not might) be disastrous.

That's my theory, anyhow. As you can imagine it receives little sympathy from the Apostles of Technology Gnome Mad. My distinguished colleague Peter Laurie, editor of Practical Computing, whose faith in science I have had little success in swaying, has

even devised a spelling corrector, which changes invalid words into valid ones on the assumption that a standard error such as transposition has been made.

When I tell him I think his prized invention is a Bad Thing, he looks at me like one of the people who said human beings would fall apart if they travelled at 40mph in trains.

And so it goes on. I hear one manufacturer talking of having not only a corrector for spelling, but one for punctuation and grammar as well. Banish untutored participants forever! How are they going to do this? Ah, science will find a way!

Wonderful! Then they can provide what we really need, and that is a corrector for muddled thinking. It wouldn't be too popular with politicians, though.

There is a rumour around our office that the management of this newspaper is thinking of bringing in one of these devices to improve on my jokes. It may surprise some of you to learn that this column is not written by a machine already.

Amdahl software products growth

THE announcement last week by Amdahl of its own version of the Bell Laboratories Unix operating system marks a substantial step in the process which is turning Amdahl Corp from a straight IBM compatible mainframe supplier into a fully fledged computer company.

Amdahl calls its version of Unix the Universal Timesharing System, and it runs under the VM/370 operating system on its 470V series mainframes.

An Amdahl spokesman in Sunnyvale explained that the company had decided to offer UTS because it is popular with universities, with computer science graduates and because IBM has nothing to match Unix in its software portfolio.

"You have to choose between TSO, which is powerful, and CMS, the Conversational Monitor System which runs under VM/370 and is easy to use. With UTS you get a powerful time sharing system which is also extremely user-oriented."

Languages available are all those supported under VM. In the US, a UTS licence costs

\$3,000 per processor per month. "You also need a Unix licence from Bell Labs, but if that costs anything it is only nominal," commented the spokesman.

Amdahl did the adaptation of Unix version 7 and has been using it in-house for some time. Requests for it from users led to the company offering it as a product. Unix is most widely used on PDP-11s and its availability on large mainframes makes it accessible to big shops which want to support 20 or so users simultaneously.

First user outside Amdahl is likely to be Bell Labs itself. AT&T and its subsidiaries like Bell are Amdahl's biggest customers.

Available

Initially Amdahl will offer UTS only to its own customers, but later on it is likely to be available to any IBM or compatible user.

The Amdahl announcement also included the Multiple System Communication and Control software which allows two processors to be run loosely coupled from a

single console. MSCC runs on both processors and was originally developed by Amdahl for its own in-house use. Support for three or four processors with MSCC is planned.

Reason for doubling the channel count to a maximum of 32 is that the big 470s are powerful enough to handle that many and several large transaction processing users and big airlines are running out of channel capacity. The IBM 3033 maximum is 16 channels.

Viewdata show debut

TELEPHONE answering machine supplier Ansafone has diversified into the viewdata market and the subsidiary formed for the purpose, Viewdata Business Systems, plans to show the Pye Visa 12-inch monochrome terminal as its first product at the Viewdata Exhibition at the West Centre Hotel in London from October 29 to 31.



The new Philips P2000 microcomputer, built around the Zilog Z80 chip and aimed at the professional market, comes out of the company's Austrian subsidiary in Vienna.

Pictured here at Sicob, the P2000 consists of the basic keyboard unit, which includes two slots for program ROMs, and a

microcassette drive. The screen plus floppy disc unit is a separate option with a stand which allows it to be placed over the basic unit. The only language is Basic. At Sicob, Philips was promoting its use with a ROM programmed for word processing, for which a delay wheel printer is offered.

Conferences row is resolved

A HEAD-ON collision between two conference and exhibition events devoted to information management in the office environment has been avoided by the demise of Imec 81, the show that was to have been held in London in the same week in February next year as Info 81.

Richard Copley-Smith, managing director of Imec organisers, Clapp and Poliak, told Computer Weekly: "It would not have been in the interests of our exhibitors to run the show next February. But Imec is not disappearing. It will be back in 1982 on dates that do not clash with any other event."

The first Imec in February this year was staged just one week after Info, which had been brought forward from April to avoid clashing with the London Computermart show, according to its organisers BED Exhibitions.

Trouble between Clapp and Poliak and BED started in February last year when Clapp and Poliak first declared its intention to put on a show in February 1980 called Info Europe. Info is the name of the event staged by its US associate, Clapp and Poliak Inc, since 1974.

BED, which staged its first Info show in 1978, succeeded in having an interlocutory injunction served on Clapp and Poliak to stop it using the Info name in the UK. Clapp and Poliak retaliated in February 1980 by threatening to sue BED for \$1 million for infringement of copyright after some promotional material for Info had found its way into the US.

The case was withdrawn on a technicality.

Clash

Imec 81 was to have been held at the Wembley Conference Centre from February 10/13, exactly the same dates as Info 81 which is going ahead as planned at the Curran and Gloucester Hotels.

Each side blames the other for the two shows clashing. Copley-Smith said that the dates for Info 81 were announced 12 days after the Imec dates were made known in a letter to exhibitors on January 30 this year. But Alan Gash, boss of BED, said that the dates of Info 81 were also printed on the back of the Info 80 show guide in the middle of January.

Gash added that the dates of all the Info shows for the next four years were listed in a statement of policy letter put out by BED in March. He remarked: "No one can say we are fooling around with dates. Info will be held in the same week of February every year."

Prime graduates

PRIME Computer introduced its graduate training scheme earlier this month when 11 such students started an 18-month course at its Southampton training centre.

Most graduates have science and engineering degrees and they will share their time between the lecture room and working on pre- and post-sales and systems analysis at Prime offices throughout the country.

Prime plans to employ the graduates at the end of the course.

More exhibit at Info 81

ACCORDING to BED Exhibitions, the organisers of Info 81, the number of firms booking space at the show has increased from 85 to 71 following the decision by Clapp and Poliak to kill Imec 81.

But Clapp and Poliak says that some firms which were intending to exhibit at Imec 81, including NCR, have now decided to add their names to the list of

Segment memory for Fast-2

HAVING introduced its Fast-1 16-bit microprocessor earlier this year (CW, July 3) Philips is working on a faster version with extended addressing. The Fast-2 will use segmented memory techniques to address 8 megabytes of main memory and will cycle at 230 nanoseconds compared with 32K-words and 385 nanoseconds for the Fast-1.

The chip is a microprocessor version of the Philips P800 series microcomputer and is therefore locked with a wealth of mature software.

It comes in a 40-pin package and has 16 on-chip and 256 external registers, and 64 input-output ports.

Languages supported include Fortran IV, RPL 2, Basic, APL and an assembler. Philips in West Germany, responsible for the company's small business computers, is studying the Fast-2 version for possible use in future business systems. Volume deliveries should start within two years.

A board computer version of the Fast 1 called SBC is already available for technical applications and Philips is using it in its own plants.

● "Fast" stands for Fontenay-aux-Roses where the chip was designed. Apeldoorn, where the layout for the masks was done, Sunnyvale where Signetics is making it and T for Technology.

Electronic mail boost from Philips

PHILIPS in France has announced an electronic mail system for the banking market based on the PTS 6000 series of banking terminals and computers.

Called Office 85, it was originally developed on behalf of the Swedish PTT. The vital elements are Philips P 5002 word processor and the controller mini in the PTS 6000, which comes from Philips P800 series.

The mini needs disc backing so that messages can be stored and retrieved, sent on to other PTS 6000 systems or a central mainframe, or transmitted over the telex network.

Office 85 is a small step towards Philips' global aim of offering integrated systems embracing transmission and processing of text, pictorial information and speech, and will apply new technologies that it is researching, such as video discs.

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FOCUS

Ignore these happenings at your peril

SICOB and the Computer Users' Year Book have a lot in common. Both arrive on the DP scene at the natural start of the computing year and both deal with massed data and are packed with information.

This year, Sicob, the French international computing exhibition, overflowed on to adjoining rooftops, and the CUYB has overflowed to coloured indexing.

Given the growth rates, next year could well see Sicob splitting into separate office furnishings and computing exhibitions, while the CUYB splits into two volumes or possibly publishes on microfiche.

In any event, ignoring either happening would probably label the DP man as "yesterday's man" or at least "last year's". The main theme of both events is the telecommunication explosion. Just about every stand at Sicob demonstrated the ease of transmitting data, voice and facsimile traffic across wide spaces. It is now feasible to bounce data off convenient satellites and have the reply back almost before the transmit button is released. But communication routes to the more local "Crazy Horse Saloon" was rather more difficult, the telephone lines seemingly being permanently jammed.

Snags

Whether it is a matter of finding the way round Sicob or the CUYB, many snags line the route. Unexpected bottlenecks occur at every section and unless there is total dedication to the task in hand, it is all too easy to get sidetracked on the latest range of Grundig cinema-sized TV video systems or the number of Philips computer installations in Gloucestershire using Ada programming.

Most interest at Sicob was on the much announced Burroughs B5900 range. The new system is billed as the last conversion and the smallest large machine on the

market. Whether users will appreciate the total IBM independence in software remains to be seen.

Q1, the National Enterprise Board-supported microcomputer company showed UK enterprise in presenting the new work-desk Winchester disc system 100; as did ICL who made a welcome return to Sicob after a break of three years.

Puzzling

For the UK visitor, Sicob is puzzling. Everything seems to be up and running on day one and there is a noticeable lack of builders, painters and system engineers.

Refreshment facilities are more than adequate although wine appears more readily available than lager. Information services were in evidence, but all routes tended to lead back to the elevated Honeywell Bull display or the ever hectic IBM stand.

This structured path approach is not reflected in the CUYB. However hard one tries, the required section seldom comes to hand. Data retrieval operations almost invariably have to be channelled through the index or even through the index of indexes.

Most user traffic by tradition concentrates on the salary section and this, possibly deliberately, comes early in the volume. The analysis this year is fully comprehensive, covering 21 job categories, listed by both installation size and location.

Once again, DP managers come out poorly in annual salary increases. Programmers had an average pay increase during the year of 26 per cent compared to the more modest 18 per cent for the DPM.

Not surprisingly the book reports an increase in the number of training schools. No doubt they are coping with a rash of DPMs seeking to be converted to programmers.

Meanwhile, the CUYB has introduced a new order of DP merit - the "first-time CUYB reader." This category certainly sorts out the DP men from the boys. Future BCS qualifications could well include a minimum of three years' CUYB experience.

"The British Airways computer print-out system is as easy to handle as its oldest competitor"



John North, British Airways Project Manager for Ticketing and Sales Accounting was one of the people faced with the problem of finding a ticket printout system that was as easy to handle as

any system's oldest competitor. The delightfully unsophisticated ballpoint pen.

And after conducting a thorough evaluation, the printing system they chose was the Texas Instruments Omni 810.

THE PROBLEM

Over-complicated printers all too easily break down and leave the poor sales clerk trying to produce seven legible ticket copies by hand. Which is not just inconvenient but also a waste of valuable time. So, when British Airways needed to order 150 printers for their sales offices all round the world, they kept their sales staff very much in mind.

Firstly they gathered experts from Engineering, Maintenance, Commercial Users and their top

THE SOLUTION

The Texas Instruments Omni 810 won convincingly. Which was particularly pleasing since it was also the least expensive printer on their list.

With the Omni 810 you don't have to be a computer expert to make print adjustments.

In many cases they can be done quickly by the clerk himself.

And it's also made up of large sub-assemblies for ease of repair and maintenance.

Qualities like that together

TEXAS INSTRUMENTS
We put computing within everyone's reach.

I am interested in the Omni 800* range. Please send me further information or arrange for a representative to call.

Send this coupon to Christine Langley, Texas Instruments Limited, European Digital Systems Division, Manton Lane, Bedford MK41 7PA, or ring her on (0234) 67466.

Name _____
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OMNI 800
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CW 1

PAGE SIX

for programmers
and analysts

by Pamela Rowe

Difficulties of trying to gain entry into this 'understaffed' profession

THE other day I received a phone call from an operator working in London, asking how I broke into programming. He has been trying for 14 months. His original idea was to get there via Ops. To date he has answered 25 advertisements for trainee programmers, applied for retraining with his company and taken two evening courses — one in Cobol involving one evening a week for a year, and another to gain the City & Guilds certificate in Data Processing, which took a gruelling three evenings per week for a year.

He also estimates he has written some 10 Cobol programs "helping out" while employed as an operator for the Army & Navy Stores. He has taught himself Assembler and PL/I, though not used them in anger. Results? Well, he did get an aptitude test from his employer but failed to get the job at 10 points below the top scorer. From the others he has not had a single interview.

"It's terrible now," he said. "For one operations job I went for, there were 250 applicants for three vacancies."

The only avenue he has not tried yet is a TOPS course, partly because of the worrying doubt about the prospects at the end of the course, but mainly because of financial commitments. Now he has to reconsider whether he can afford it after all. "I've got to make sure the mortgage and other bills are covered, but I'm getting a bit desperate now. I feel as though I'll go on like this for ever."

Leaving aside his aptitude, which is an unknown quantity, his story does underline the difficulties involved in entering programming — a profession which suffers from a serious shortfall of 500 programmers in London alone, states a recent report.

I have received many letters, with similar views or from the other side of the fence. I've picked out the bones of some of these to present a whole picture . . .

Firms should do their bit

I AM sure that, like me, fellow managers were saddened by the two letters from TOPS graduates who were unable to find jobs (CW, September 4). Apart from the obvious questions about attitudes and presentation of the individuals concerned, these letters illustrate an important aspect of the staffing problem.

Last March I was so concerned about the increasing competition between user companies for scarce staff that I invited a number of companies to a seminar at Kalamazoo, in Birmingham (CW, April 3). The most important conclusions

were that replenishment of staff losses should be by recruitment of trainees and that TOPS courses are a potentially valuable source, and secondly that stronger links are needed between commerce, industry and educational establishments.

As an employer I have replaced the six, out of 71, experienced people whom I have lost this year, by trainees.

I know that as a result of the economic recession the employment situation is now easier for employers than it has been for some time. However, we must be ready for the upturn when it comes — and this means taking trainees now. It is, I believe, in our own best interests to avoid future shortages for experienced staff by ensuring that we all contribute towards an increase in the total

number of such staff.

The TOPS training managers that I know do make considerable efforts to place trainees, and in most cases these efforts are rewarded by very high placement levels. (I am, for example, extremely surprised by the statement in Mrs Smith's letter that 50% of CDI graduates are unemployed.)

Where, I think, in some cases there may be room for improvement, is in the amount of contact between users and trainers.

Whenever a training institute contacts you for consultation on course content, computer type or availability, or types of languages, I would suggest that you would find a long-term benefit in responding fully.

DOUGLAS BROWN
Executive DP manager
Kalamazoo Computer Services

Employers lack interest

APPROXIMATELY one year ago I discovered my temporary contract with Bradford Immigrant Services would not be renewed. I had been teaching English as a second language for a year when I finally became unemployed.

After getting absolutely nowhere in gaining employment in teaching, I began to look at the possibilities of a new career in computing.

First I thought of a TOPS course, but did not pass the aptitude test. So not having a degree — I have a Cert. Ed. — I applied to Huddersfield Polytechnic. After an interview I was given an unconditional place to study for a BA in Computing and Business Studies. I began on September 22, but my problems also began. Having already had one grant I have, after appealing, not been able to obtain a penny piece from the local Education Authority.

Fortunately, I can just about pay my fees and expenses in the first year, but I will have to rely on industrial sponsorship if I am to complete my degree.

Here is the real problem: Despite the apparent shortage of well-trained and qualified staff, my approaches to the computer industry have met with a complete lack of interest.

The training of the degree course is thorough, involves one year in an industrial context, in-

cludes sections on accountancy, economics, sociology, and teaches programming in three languages: Cobol, Algol, and PL/I. It is extremely cost effective, yet apparently arouses no interest from companies for sponsorship as an alternative to expensive manufacturers' courses.

D. TELFER
Bradford

I sent a copy of this letter to Bradford Local Education Authority, and invited their reply. Their spokesman said:

I WOULD confirm that the council policy is that where students have already received assistance for one course they will not normally be considered for an award for any further course, until they have completed an equivalent period at their own expense.

Where a student feels he has a special case he may appeal and this is considered by an appeals committee. Mr Telfer did appeal but the committee did not feel his circumstances were such as to warrant an exception being made to the general policy. Applications for further training are not normally considered unless they form a natural progression to past studies.

In a few extra comments I managed to draw out his spokesman. He admitted that a change of job stream is not encouraged, even when, as in Mr Telfer's case, it is difficult to get a job in teaching and there is a serious shortage of trained computer staff.

"Mr Telfer has had one bite of the cherry," he said. "We don't see why he should have more assistance. We have a lot of demand and money is limited. We feel we should assist people once, and then it's up to them."

He went on to make the point that the appeals committee had carefully considered Mr Telfer's case, but had felt the change was not in his own best interests. "We did offer him an interview with our careers officer, help him make a decision, but he did not take advantage of it."

Picture not so gloomy

UNFORTUNATELY your correspondence paints a gloomy picture for TOPS trainees. I have recently completed a TOPS course in Leeds as a trainee programmer/analyst, and as yet have been unable to find a job.

I am not discouraged, however, since several of my friends on the course have found employment, and are making a productive contribution from an early stage. DP managers have, by and large, been favourably impressed. Most of us worked hard on the course and are more than willing to continue to do so.

There are, however, some criticisms to be made of the TOPS courses. I think that more time spent on actually writing programs would be of greater interest to employers. My course spent three or four weeks on accounting and

business systems as a background to analysis. To a large extent this is time wasted if employers are looking not for analysts but for competent programmers.

Also, I think that the "profile" system used by the training schools to represent their students is inadequate. It is superficial and tends to give a misleading impression. It would be interesting to hear comments from DP managers who have been faced by a pile of these profiles when looking for a junior or trainee programmer.

ALAN PEMBLETON
Leeds

Criteria must be strict

MY personal experience includes the recruitment and selection of TOPS students and the subsequent placement of the more successful. This varied between 70% and 80% of the total students on a particular course. In my opinion it would be quite possible, even in today's economic climate, to achieve a significantly higher figure.

However, to do this two conditions need to be satisfied. Firstly the selection criteria must be sufficiently strict as to include only students who are capable both technically and emotionally of completing a demanding and difficult course.

Secondly the training must be designed not to pump the students as full of computer knowledge as possible, but to give them sufficient knowledge of a number of computer techniques, to make them a worthwhile proposition.

All in all, I feel that training companies should be more aware of the changing requirements of the computer industry and ensure that their courses react to this change. I also feel that more emphasis should be placed on the preparation of students to take up employment.

MARK PLANT
Marketing manager
McDowell, Knaggs and Associates
Worcester

Puzzler

THERE is only one solution to the equation $x^2 + y^2 = z^2$, given the fact that all three integers involved are different. Can you find it before turning to page 48?

Several readers have written or phoned to point out that Dudeney's "single-switch" equation $AB \times CD = BACD$ (Puzzler, July 31), supposed by him to have only the single answer $41x39 = 1435$, is also solved by $21x9 = 1260$, $51x30 = 1530$ and $84x90 = 8820$.

Admittedly, this great 19th-century mathematician was working without the aid of a computer. Nevertheless, it is indeed surprising that the "cook" has remained undiscovered till the present day.

SOFTWARE FILE

Empire strikes back at market

ONE of the pioneers of the software products field, Applied Data Research, is keeping up with the times. Its latest system, Empire, is a sign of how the emphasis has changed from measuring machine performance to managing resources.

Empire is a financial modelling system for IBM and other mainframes and large minis. It is aimed at a growing market, which caters for the increasing need to combine present facts with future possibilities to keep a user's growth on an even keel.

Likely needs

The idea of a financial model is that using facts from past years one can build up an idea of what might happen in the future. Using complicated statistical formulae in macro form a user can predict the company's likely needs in such areas as raw materials, manpower and cash flow.

Having worked out one's model, ADR's system allows the user to play around with potential changes — the "what if?" option.



POLLARD . . . recently designed system.

First the various elements and their relationship to one another is established in a matrix. The user can then use standard functions such as depreciation and risk analysis to make forecasts.

The what-if option is useful when the manager wants to see how changes would affect his forecast. It allows him to take such imponderables as an increase in

VAT or devaluation of the pound into his profit-forecast, or adjust his raw-materials order according to availability.

Rather than presenting the information in rows of figures, ADR has made use of a Tektronix 4027 colour terminal which employs graphics and colour to give the results an easily-understood format.

Empire already has 450 users in the US, where ADR launched it 18 months ago. It is available in the UK for £18,500.

Financial modelling has become a boom market for software applications. ADR's Nicholas Pollard, managing director of the firm's recently set-up UK branch, believes that Empire has an edge in the market by virtue of its novelty. "It is a recently designed system and advanced facilities have been integrated in its design rather than added on," he said.

Compower's APL relational database

Compower's APL relational database

LATEST addition to the rapidly growing range of business systems using the high level language APL is relational database. Called Piramid, it comes from the Stoke-on-Trent APL bureau Compower and uses the company's Powershare network.

Although it is aimed at helping non-APL users, making use of English-language commands and guidance, the database is also likely to be an aid to APL programmers who are used to dealing with arrays and two-dimensional tables.

"The linkage between files can be made on one field," explained Alan Gregory of Compower, "and any key can be a concatenation of elements. Theoretically, there is no limit on the number of files we can join. It all depends on the amount of disc space the user is prepared to take up."

"We have actually linked 24 files together on one application for partial text retrieval," he continued. "In another, for personnel

files, everything is coded in separate tables and retrieved as expanded code."

The system is designed to be informal. Once the datasets and their relationships have been set up, the user only has to specify data name and search criteria to get an answer. Security clearance is automatically checked before access is allowed.

Compower claims that clients can benefit from the service without APL knowledge; experienced APL users can extend Piramid functions to suit their own purposes.

It is already being used for order processing in an engineering firm, a property register in an investment firm, and by Compower itself to monitor network performance.

Compower is a wholly-owned subsidiary of the National Coal Board and offers a library and bureau APL service including the teach-yourself APL course, Staple.

New tool for PE

A PERFORMANCE enhancement tool which is said to double throughput and halve response times for Perkin-Elmer 7325 and 3220s has been released by Tri-point Associated Systems Consultants at Sunderland. Called Intercom-T, it supports up to 60 terminals under OS32/MT.

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RPG II updates

IMPROVEMENTS in program development and maintenance capabilities are promised from the enhancements to Data General's version of RPG II running under AOS and AOS/V5. The improvements are said to provide high-speed execution of RPG programs.

OP SPOT

A site where ops are given a high status . . .

THE UK direct mailing operation of Reader's Digest is on a scale sufficient to give the Post Office induction. Every year over 50 million items are posted from a controlled list containing some 22 million names. The list must have nearly every household in the country on it, although the Digest's publicity department is coy when it comes to giving details.

Says Philip Wilson, computer operations manager at the Digest's Old Bailey installation, "It would be impossible to put a price on that list." He is in charge of the computer room and an office printing department, and has responsibility for 39 people. Eleven of this number are directly involved in operating an IBM 3031 which runs day and night for seven days a week administering the Digest's promotional and billing activities.

Stability

For those anxious to see operating defined as a career, the good news is that the site is one where the operator is given a high status. The bad news, if anyone is thinking of applying for a job, is that staff turnover is so low that no one has been recruited into ops for over a year.

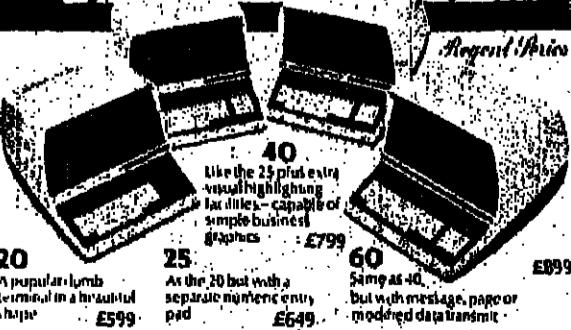
To some extent this stability is attributable to the incentive of a profit sharing scheme. It is also due to the fact that a career structure exists within the installation.

The average time an operator spends with the company is four years and the longest serving member of staff, shift supervisor Chris Green, has been there for 20 years.

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ADDS GRAPHICS

Progress

Prior to his work as a bus driver, he did a short stint as a salesman and spent seven years in an administrative job. He left that because he found no prospects for promotion.

"When I started here I was unsure if I could achieve anything as an operator," says Bloomfield, "but if you've got the ability you can progress in this company."

At this point Wilson clipped in, "It's in our own interests to let people progress."

"The operator," says Wilson, "should not be someone tucked away with a black box unknown to anyone else in the building. That's unforgivable." So he allows all members of the Reader's Digest staff ready access to the machine room, although this access is strictly controlled.

Programmers are not allowed to stroll in and out of the machine room and the operators handle most of the program testing work. Programmers and operators communicate by way of a hatch at the back of the computer room which can be opened only from the operators' side. I was told that no programmers had succeeded in climbing through the hatch.

Wilson seems to encourage a move in the opposite direction and says, "One of my ambitions is to get my ops trained to systems programmers."

An understanding of operations is demanded of the programmers who spend a day or two in the machine room as part of their induction course. The increased technicality of modern operating systems makes it a necessity for people to know what is happening in the computer, said Wilson.

Says Bloomfield, "Their priorities are our priorities. We're all involved in producing the same end product."

At Christmas there will be a change from the current 3-megabyte 3031 to a 4-megabyte IBM 3033 and with that will come a change to DOS/VSE2. The training for a previous change from EDOS to DOS/VSE1 was handled by Infotech. Wilson was so impressed with the course that he wrote Infotech a glowing letter - which glowed enough to be reprinted in Infotech handouts.

He says, "The net result of the in-house DOS/VSE training was the smoothest transition of operating systems I have ever managed." It gave him "the firm conviction that in-house training from Infotech is the method I will use in the future for the general training of all my staff."

Switch

Apart from the increased machine power the 3033 will bring, there is to be a switch to Storage Technology discs. Wilson says, "PCMs are that much more competitive with peripherals than IBM is at the moment, although it's a different story with the processors."

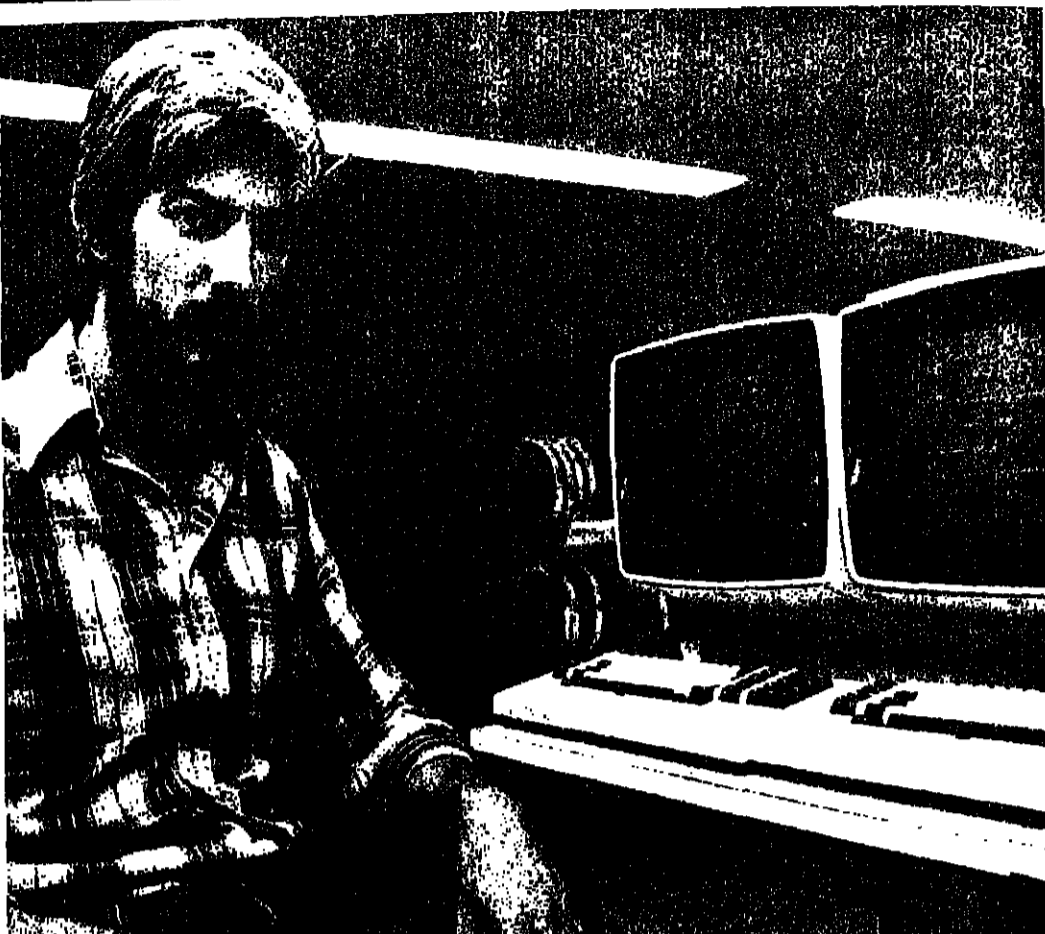
He obviously can't make any predictions about future price changes, but finds himself, like so many others, cast in the role of an IBM watcher.

Wilson would like to have customer inquiries online within the next two years, and ultimately wants main files to be held on fixed disc. At present the names and addresses of 8 million people who have made or are making a purchase are held on 42 reels of 6250 tape.

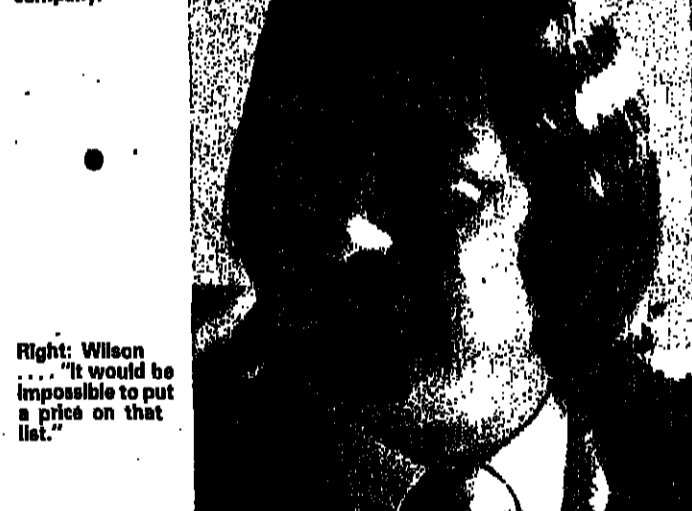
When a cold start is called for . . .

FEW VM sites regularly do a planned cold start IPL. In any case the users are rarely too badly caught out by an unplanned one, as they can fall back on their files in the event of a catastrophe.

Under the VM/370 operating system cold starts are done in a number of circumstances. They



Above: Bloomfield . . . "If you've got the ability you can progress in this company."



Right: Wilson . . . "It would be impossible to put a price on that list."

Blast - the computer's blown up!

THE Bowater paper organisation seems prone to the odd explosion or two. On September 17 its electricity generator at the Kemsley paper mill exploded, putting the computer out of action.

And three years ago Mike Roberts, an assistant ops manager at the company's Northfleet installation, was awakened with an early morning phone call.

"The computer's blown up," said one of his night shift operators.

"Don't muck me about," said Roberts, maybe

thinking along the lines of a disc head crash or a hardware parity error.

"No, it's blown up," insisted the operator. What had happened was that a central heating boiler had exploded beneath the computer room and an ICL 2803 had fallen through the floor.

Teetering on the edge of the crater was the console table, so the bold ops manager crept into the wreckage to type 'die' - and the machine quietly pegged out.

It's the operator that gets the blame

WHEN the buck is passed in computer installations, it often stops with the computer operator. It is the operator who traditionally gets the rough end of the stick.

Existing closer to the bowels of the machine than anybody else, operators have a dual role. On the one hand they must wrestle with the psychology of the equipment and its operating system, while on the other they must deal with the programmers, analysts and users.

For the moment, assume there are no technical skills enough to cope with some of the problems and consider the difficulties

caused by other people.

Any individual who is the victim of a computer foul-up will, given half a chance, go for the people with their fingers on the buttons . . . the operators. From the apologetic consumer with an outrageous rates demand to an office manager who is running behind schedule, it's the same old story - blame the operators.

In fact, management is particularly guilty of blaming the operators for what, all too often, are programming errors.

Management should know better, that is what it is paid for.

by Paul Fisher

Are mere men afraid of the dark?

CAST your mind back to the beginning of September when this page quoted Robin Weldon, DP manager at Eastbourne water works, as saying, "Lady operators are conscientious, but reluctant to work at night."

He backed up the observation with his experience of a lady who had vowed to eschew night shifts due to her fear of strange nocturnal noises.

Disruption

June Punnett, an operator on Southampton University's 2900, replies, "The main reason that people (not just women) dislike the idea of night work is the disruption of normal routine in both home and social life. Due to the domestic role of most women, they find it more difficult to adapt their routine to different hours."

She is talking from the experience of having worked a 24-hour, three-shift system for the past five months and says, "I would urge women not to shun shift work without giving it a proper trial."

Spiders?

She has found that shift work has not restricted her freedom, cramped her social life or made her marriage suffer, and calls on Mr Weldon, "as a gentleman DP manager to tell us what he is afraid of. Is it spiders, the dark, enclosed spaces . . . or female domination?" Mr Weldon, speak up!

As for the programmers . . . Regardless of whether it leads to harmony or not, programmers and operators regard each other as separate breeds. At times their hostility towards each other can make Dr. Day look like a game of croquet.

Programmers are prone to think of operators as unco-operative and half-educated, jealously guarding the machine behind elaborate security arrangements. Starved of fresh air and daylight, the operator is characterised as a creature without normal human responses.

Many operators have responded

ELBIT MOVES DOWN-MARKET WITH MICROPACT

Micro from Israel based on twin Z80s

AS well as preparing to enter the lower end of the IBM plug-compatible market with its Anat processor, now licensed to Nixdorf as the 8890 (CW, September 25), Israel's Elbit is moving down-market with a microcomputer based on twin Z80s.

Called the MicroPact, the unit has the processor built into a desktop display unit, offered with separate twin eight inch floppy disc drives. Minifloppy drives are also available, as well as hard discs of between 12 and 96 megabytes capacity.

The unit comes with two serial and two parallel ports, and the most attractive feature is the software. It is offered with the highly-regarded UCSD, University of California at San Diego, "Pascal operating system" as well as the

widely-used CP/M operating system.

As well as Pascal and Basic, Cobol and Fortran are also supported, and the basic unit is priced at under £2,000 in OEM quantities.

The MicroPact is an extension of Elbit's new DS2000 VDU, which also incorporates a Z80A. First two applications of the MicroPact in Israel are at the Discount Bank in Tel Aviv, and inventory control at Elbit itself.

The Discount Bank is using the MicroPact to enter close of business prices on the Tel Aviv stock exchange. The prices are entered on a master terminal backed by a floppy drive, and the information is distributed around the bank via other terminals.

Elbit does ruggedised versions of all its products, since a substantial part of its business is military, both with the Israeli armed forces and for export.

A ruggedised MicroPact is one offered in the UK at the moment, but would cost about three times the price for the standard version.

Software house moves into micros

A LONDON-BASED software house, Ludhouse, of Streatham Vale, has moved into the microcomputer systems business with a range of machines based on the Bytronic Megamicro that run the Ludhouse set of standard accounting packages.

On the hardware side the basic Ludhouse system costs £8,080 and comes with 48K bytes of main memory, a double sided floppy disc system which can hold 1.2 and 2.4 megabytes depending on the density, a 120 cps matrix printer and one VDU.

Applications packages range in price from £250 for cash flow forecasting to £2,000 for contract costing while sales purchase and nominal ledger each cost £500.

Payroll is priced at £480 while a combined sales ledger, invoicing and stock control system costs £1,000.

Systems software consists of the ubiquitous CP/M from Digital Research, and languages supported include Basic and Microsoft's Cobol.

Attributes of its software highlighted by Ludhouse include automatic audit trail, full integration of all ledgers to final accounts, the ability to handle aged transactions without changing discs, to post the next financial year, before closing down the previous, and to handle both unallocated cash and part payments against invoices. Free format final accounts reports are available at call.

Up to six months ago, Ludhouse was called Robson's Computer Advisory Services.

University twins

UNIVERSITY of London has ordered twin 2956 systems from ICL for handling jobs like financial control and student record processing in its Management Systems Division. They will be installed at the University's Senate House installation in central London, replacing a 1903T. New systems will be developed under VME/K.

LT contract for Ferranti

LONDON TRANSPORT has placed a £65,000 development contract with Ferranti for a double ring communications system for the control of train signals. Ferranti is to provide a trial system to prove the design concepts before they are applied to a stretch of track at the northern end of the Piccadilly Line.

Nodes are to be based on Ferranti Argus 700F minis and the serial links in the ring will run at 9,600 bps, while links to local controllers will run at 1,200 bps.



Elbit's star programmer puts the MicroPact through its Pascal paces at the company's headquarters in Haifa, Israel. The floppy disc unit is on the floor. The programmer, who declared, "I don't deny it" when one of his colleagues described him as a genius had taught himself Pascal and after three weeks was writing file, dump and other utilities for the MicroPact.

Rapid fall in values of used IBM machines predicted in US report

FUTURE values of used IBM and certain compatible machines will fall rapidly, according to a new report by Computer Financial Inc., a US leasing company that is betting its own future on the accuracy of its forecast.

The prediction is based on a mathematical model which uses trends in technology over the last 30 years as well as IBM's pricing patterns and what CFI calls "user psychology". This gives predictions in dollars of the secondhand value of IBM products and key competitors' offerings.

It also predicts monthly lease rates, which are related to sale prices but in many cases do not track them exactly, according to CFI.

The leasing company's study advocates a conservative approach to, for example, IBM 370 mainframe values, and instances losses among leasing companies and their backers as supporting evidence.

Peripherals do not follow the same pattern as mainframes, the study adds, in part because many have significant mechanical costs which do not decline in the way

semiconductor prices have. IBM's rate of introduction of new peripheral devices is also not as consistent as that of mainframes.

The CFI study costs \$3,000 which buys a year's supply of updates and background data. Also available are studies on various product groups, ranging from \$200 for a 3340/3344 disc drive to \$900 for a 3033 report.

The full set costs \$12,000 and are available from Computer Financial Inc., One University Plaza, Hackensack, New Jersey 07601, US.

RTL/2 users to meet

THE 1980 annual meeting of the RTL/2 user group is to be held at the Park Court Hotel, Lancaster Gate, London, on October 7 and 8. Papers are invited on such themes as the handling of data structures, microcomputer applications and performance evaluation.

For further information contact Caroline Hynes of SPL at 630 7833.

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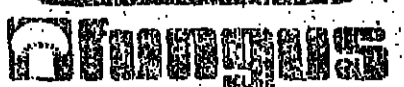
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PEOPLE and EVENTS

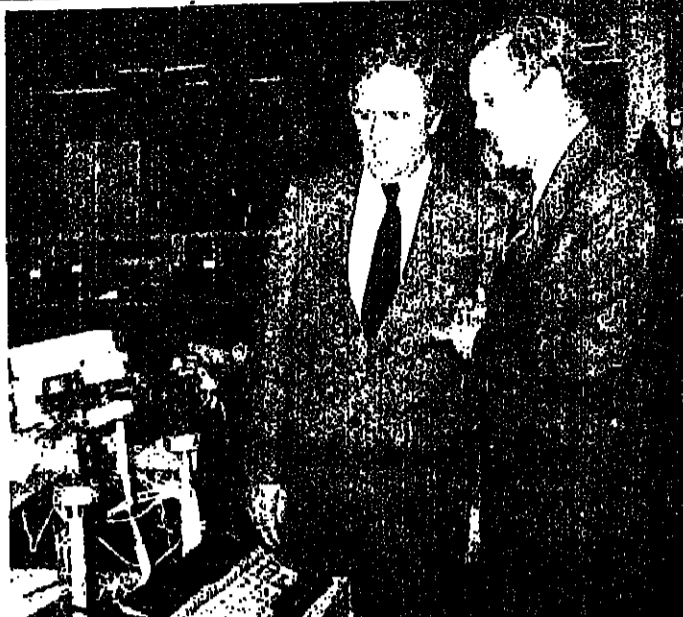
Former Exxon man 'stung' by Hornet

AN alleged attempt to sell stolen plans of a new line of Qyx word processors to IBM, has led to the arrest of former Exxon Enterprises executive, Orion Briel. The plans were for a forthcoming line of Qyx machines, called the Hornet series. An Exxon security official had earlier reported that the Hornet plans were missing from the company's headquarters.

According to US District Court papers, Briel left his job as manager of Qyx's marketing publications operation on August 13. On August 14, he allegedly wrote to Dan McLaughlin, vice-president of marketing for IBM's office products division in Franklin Lakes, New Jersey, offering to sell the Hornet plans to him. McLaughlin notified the FBI of Briel's alleged offer.

On August 22, an unidentified FBI agent, with Exxon engineer Jack Atkin, met Briel at a highway restaurant outside Philadelphia. The two posed as IBM representatives, sent by McLaughlin to discuss the purchase of the Hornet plans from Briel.

Briel allegedly detailed various aspects of the Hornet line, as well as of other company projects. He is said to have offered the Hornet documents for \$100,000. Briel was arrested and charged with mail fraud.



Our picture shows Alex Fletcher, Under Secretary of State for Scotland and Minister responsible for Industry and Education, on a visit to the Burroughs Gumburns plant. On the right is Eddie Henderson, general manager at Gumburns. Fletcher was shown the B90 computer which was designed and developed at the Scottish plant.

Chairman of the board

IAL GEORGENS is now chairman of the board and chief executive officer, as well as president of Data Electronics. Two new appointments have also been made. Tommy Davis and Tom Stephenson increase the board membership to seven.

Stephenson is president of the venture capital arm of the Fidelity company. He currently serves on the boards of Floating Point Systems, Microm Systems and Integral Data Systems.

Georgens was one of the founders of Data Electronics and has served as president since its inception.

Davis has a 25-year history in the

venture capital business. He helped to start such companies as Teledyne, SDS and Qume, and is currently serving on the boards of Tandem Computers, Logistics and Equatorial Communications.

Janet Adams has joined the Rochford-Thompson Group as public relations officer. She was formerly vice-chairwoman of the Southern FR-Link Group and secretary of the Ken Thomas Body Scanner Appeal.

Eddie Orzechowski has left Wakefield Metropolitan District Council, where he was computer development officer for six years, to join Computer Machinery Company as territory manager.

Finance chief for Intel

WILLIAM WESTMAN has been named vice-president of finance at Intel Corp. He replaces Laurence Hootnick, who was promoted to vice-president of finance and administration for the company.

Westman joins Intel from Hooker Chemical Corp in Niagara Falls, New York, where he was vice-president of finance for two years. Before that, he held various financial posts with BASF and General Motors.



Buesst

Morrell

UKAPE new president

ROY DAVEY has taken over as president of the United Kingdom Association of Professional Engineers (UKAPE).

He has been a member of the association for eight years, and is a construction engineer for ICI Fibres, based in Teesside.

Davey is currently chairman of the Industrial Relations Committee. He became a student member of the Institution of Electronic and Radio Engineers in 1960, a graduate member in 1963, and a chartered engineer in 1965.

Commenting on the new appointment, Davey said "It will be one of my main tasks during my term of office to encourage and foster as much involvement as possible in the association's affairs at grassroots, and to enhance the role of the professional engineer wherever he may work."

David Markby has been appointed managing director of Leasco Software. He joined the company in 1970 as project manager, and in 1978 became operations director.

Lyndalstar has appointed Alex Groendyck as marketing executive. He joined the company on completion of a management training scheme.

Richard Shlemmer has joined Gher Data Products Inc as director of human resources. He was previously director of employee and community relations at MSI Data Corp.

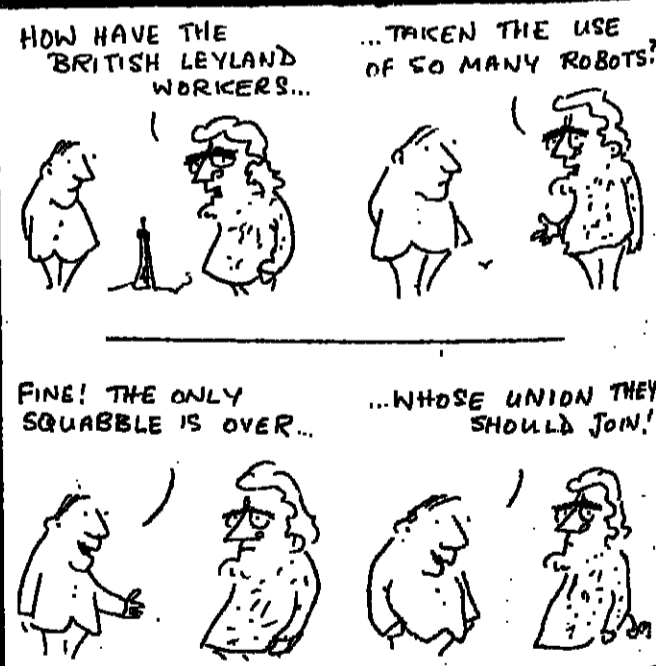
Rediffon has made two new appointments. They are Steve Hibben, who joins as territory manager for the Southern Region and Howard Seddon, territory manager for the Northern branch. Hibben was previously sales manager with Memorex, and Seddon was sales manager with Applied Computer Systems.

Nigel Barnard is now territory manager with Computer Machinery Company responsible for sales in Berkshire and West Oxon. He was formerly with Datskill, where he was application software salesman.

Eddie Sims, chairman of GEC Fagor, Liverpool, has been elected the 1980/81 chairman of the Electrical Installation Equipment Manufacturers Association (EIEEMA). Grant Bewick, managing director of Kenneth E. Bewick Ltd, is vice chairman.

Derek Cook has been appointed field sales manager for CIL, the former with Micropolis in the US.

Liveware File



DIARY

OCTOBER 6-7 Britain's Digital communications for satellites. Technology Transfer Society (TTS), London. (01) 242 4045.

OCTOBER 7 Automation and the office worker. Simon O'Leary, Birmingham branch IDPM. Saracen's Head, Stafford Road, Shirley. 7.30pm.

OCTOBER 8 Annual General Meeting. BCS. The Council House, Birmingham. 2.30pm.

OCTOBER 13-14 Seminar: Digital communications for satellites. Technology Transfer Society. Manchester. (01) 242 4045.

OCTOBER 14 Seminar: International technical marketing. Technical Marketing Society of America/TTS. London.

OCTOBER 14 Meeting. The microcomputer: a complete package for the smaller user. A. Cones. Hull branch IDPM. Hull City Centre, Ferryby High Road, North Ferryby, North Humberside. 7.15pm.

OCTOBER 15 Meeting. Long haul optical fibre digital systems. IEEE. Birmingham. 6.30pm. Tel: (01) 636 3357.

OCTOBER 15 Meeting. Keltis Meadows. Central London branch IDPM. East and Day Studio, 15 Broadwick Street, London W1. 6pm.

OCTOBER 16 Seminar: practical operations in vision and control. Colin Begg IDPM. The Industrial Society, The Range House, 3 Carlton Road, Pease, London SW1.

COMPEC 80 will take place from November 4-5 at Olympia, London. The exhibition is organised by IPC Exhibitions and sponsored by Computer Weekly, Data Processing Weekly, Systems International and Practical Computing magazines. Practical Computing magazine also sponsor Microsystems 81. Computer 80 will display computers, peripherals and systems and include for the first time an IBM stand. An IBM 4341 will be the 31st display terminal.

Further information about Computer 80 and Microsystems 81 can be obtained from CWA Maxwell. Tel: (01) 261 8891.

Caught in the middle of the Iran-Iraq conflict was Logica consultant SHAUN O'BYRNE, who flew to Baghdad on Friday, September 19, and was lucky to escape on the last flight out of Baghdad on Monday, September 22.

The events described below are in his own words.

O'Byrne has been with Logica for four years and is a principal consultant with its communications group. Prior to joining the firm, he was with minicomputer manufacturers Modcomp and Varian.



O'Byrne

LOGICA MAN'S NARROW ESCAPE

'I was on the last flight from Baghdad'

DAY 1, Sept 19

GET up early and pack, eagerly looking forward to my first Middle East assignment. I am booked to fly to Baghdad, to discuss with an oil company the possibility of Logica undertaking a feasibility study and implementation project involving just about every computer skill you can think of. Our Friday is Iraq's day-off, hence the trip out today to get in a full working weekend.

Straightaway things go wrong! Heathrow is 12 miles from Weybridge, the traffic is heavy and I am booked on the 9.30 am trip. Get to Terminal 3 with only 10 minutes to go - ticket advises an hour - and I scream "hand baggage only" to the check-in girl. She tells me that I have probably missed it but presents me with a yellow-striped pass stamped "Have-A-Go". This, she explains in five seconds flat, will get me through passport control and security quickly but does not guarantee the plane will be at the other end. It works.

I run flat-out the entire length of the airport, through gate 10, on to the Boeing 707 and collapse wheezing into my seat. We do not take off for another half-hour. Once airborne I settle in and re-read the client's original requirements spec.

We stop over at Beirut for 20 minutes where half the load get off.

As we take off, I spot a used Daily Telegraph. "Iraq-Iran Situation Tense" reads its headline. A quick doze and wheels down to land at 5.30 pm their time (two hours ahead of UK).

We are ominously warned that photographs of Baghdad airport are forbidden and that all cameras should be concealed until well past Customs.

A quick look out of the porthole explains all: there below us are lines of bombers, MiG jets and many troops. Baghdad is both a military and civil airport.

On the ground the temperature is 90°F and we are ferried to passport control.

I am pleased to meet up with Ian, our Middle East salesman who has flown in earlier from Bahrain.

Problem. Ian tells me that all of Baghdad's hotels are "full" - booked by the government in anticipation of the World Trade Fair due to start in October.

We decide to get a taxi to the centre of town and search from there. I quickly learn that Iraqi driving is worse than Italian. Everyone, it seems, has a car and everyone continuously beeps their horns as they drive flat-out, overtaking on all sides.

An hour or so later we book into

an hotel - an amazing place: my room is about 12 feet by five plus a bathroom.

There are no windows, the plumbing is rickety and the huge, three-blade fan attached to the ceiling looks as though it will come off any moment and take half the hotel with it.

Still, the bed is good, the water hot and the shower works a treat. After a beer with Ian - Iraq is very "wet" - we turn in. We have to meet the client tomorrow and Iraq's working day is 7.30 am to 2 pm.

DAY 2, Sept 20

A restless night. I am just about to doze off when, at first light, the chime in the next room starts waiting for Allah and then turns on the radio for the National Anthem. I get up.

Down to breakfast; tea, Iraqi loaf and jam and bottles of 7-UP. Ian tells me BBC World News has just announced the mobilisation of Iran's armed forces.

At 8.30 the oil company's PR man arrives with chauffeur and drives us out of town to their new computer centre. An impressive building complete with air-conditioning, Austrian furniture and an expensive Japanese mainframe. If the project goes ahead our lads should be happy to work here.

The meeting with their computer team lasts about two hours and covers a lot of ground: equipment, information flow, training needs, timescales, costs and contracts.

Their leader, a good systems man, explains that he now has to get the go-ahead from above and asks us to wait for a day or two at our hotel for him to call.

Into the American Bar of the Omar Khayyam hotel for a beer and then into a Wimpy bar, to be served by an Egyptian medical student in Baghdad to earn money.

DAY 3, Sept 21

Overslept. Up at 8.00 am, quick shower and down to breakfast where Ian says he has just heard that Iraq has shelled eight Iranian navy boats. Beginning to feel uneasy.

Ian has to see a client and I decide to go to the Rafadain (State) bank and cash a traveller's cheque. I find a bank easily, but get hopelessly lost in the back streets of Baghdad.

The colour TV in the lobby keeps flashing up maps of the Iraq-Iran border. I wish I knew what the announcer was saying.

Still no call from the oil company so we decide to pay a courtesy call on Iraq's National Computing Centre (NCC). Another nice new building house-

ing a large Honeywell installation for national number crunching. Nice people. We arrange for them to meet with Logica when they visit the UK in late October.

After visit is over we provisionally book flights out of Baghdad - myself to London via Geneva and Ian back to Bahrain - for tomorrow. Back at the hotel, still no contact by the oil company. More newswatches on TV.

That evening two of Logica's clients, a lieutenant-colonel and a captain in the Iraqi army, pop in for a drink and chat about a training programme for their computer staff.

Once the business content is over we turn to the "Death of a Princess" film, the PLO, BBC and knighthoods. Ian invites them to stay for dinner but they say they are "busy" at the moment. We know what they mean.

DAY 4, Sept 22

The breakfast news bulletin talks of border skirmishes hotting up. We wait until 11.00 am and then Ian phones the oil company. Their man says a decision will perhaps take a week and advises us not to wait any longer as he will leave London the minute he knows anything. We agree this is a good idea. I pack my bags and say goodbye to Ian until we meet next week in the UK.

I get to the airport, late and smoothly pass through Customs. I spend a long time looking at the Heathrow-like departure board.

One-by-one all Iraqi Airways' flights are cancelled until only mine, Swissair to Geneva, and Ian's, Saudi Airlines due to take off in four hours time, are left on the board.

The airport, about the size of Manchester airport, appears to be grinding to a halt.

I board the DC-8 about 1.30 pm. Take-off is delayed while the military stock moves about and some MiGs take off. Where? At last we are off and I land in London at 8.00 pm.

The first thing I see is the Evening Standard headline "Iraq sends the bombers in".

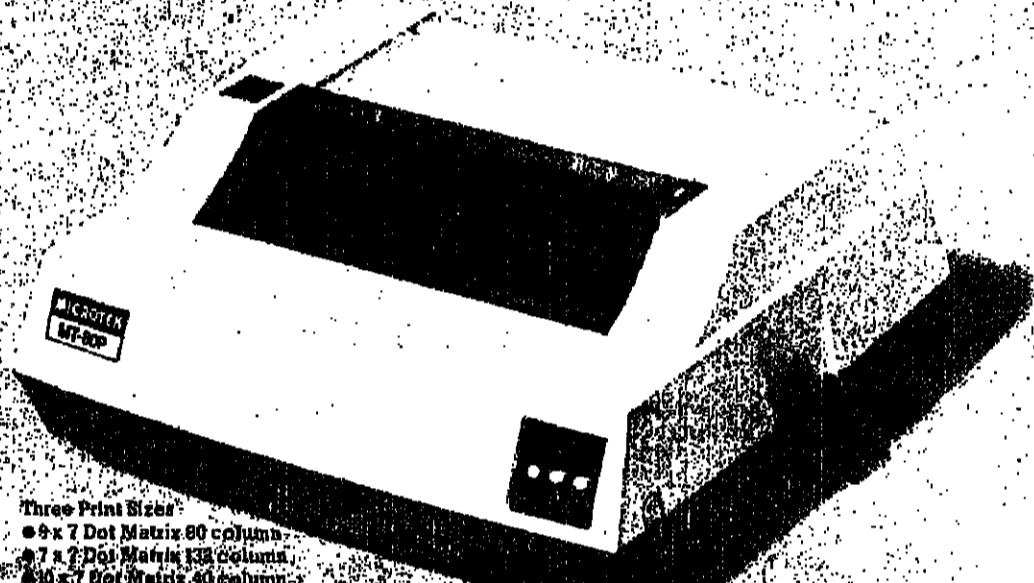
EPILOGUE

The next day it was back to the office. The morning had brought the news that Baghdad centre had been bombed by Iran on Monday night killing 20 people and wounding many more.

Baghdad is now to be blacked-out at night, the tanks are rolling and the two countries are in a state of war.

My Swissair flight had been the last European flight out of Baghdad prior to Iraq's airport being closed down.

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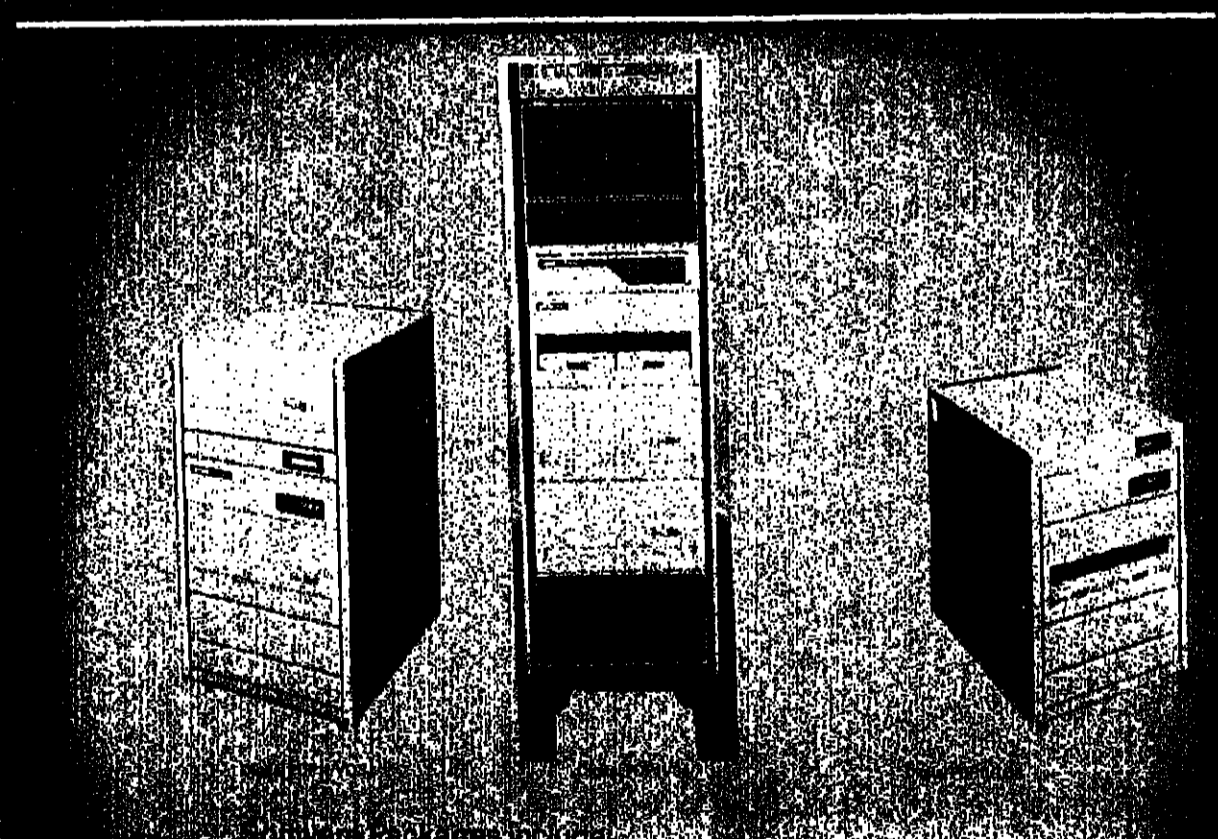
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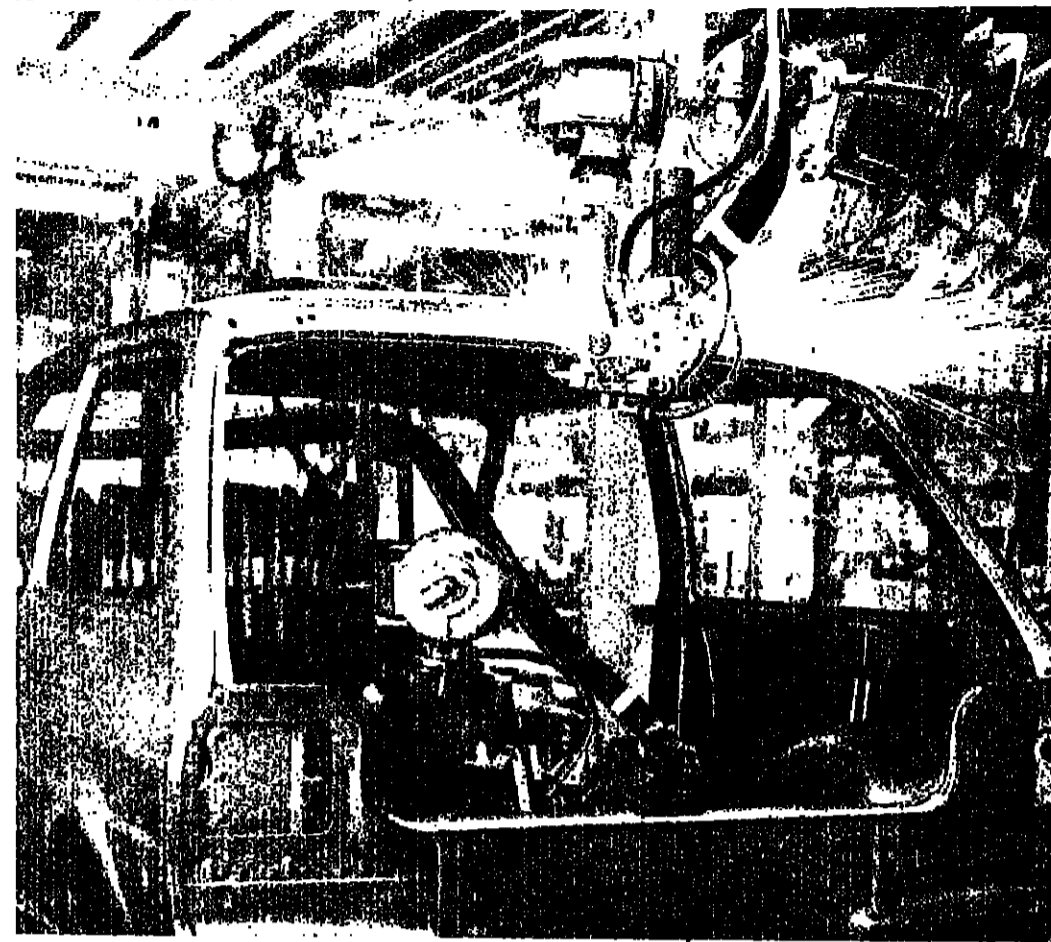
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Robot arms at work on a Metro body shell at British Leyland's Longbridge plant.

CONTROLLING THE METRO

Computers take over on the car production lines

THE need for British Leyland to make dramatic improvements in both productivity and quality has been stressed by the company's management on many occasions. With the launch of the new Mini Metro, the time has come for action to speak louder than words.

As reported last week a tour of the factory at Longbridge suggests that the necessary action will indeed happen. What you can't see simply by looking at the impressive array of automated equipment and by watching Metros slowly taking shape with barely one helping hand, is the crucial part played by computer systems.

A total of 24 computer systems which, with software, are worth £3.5 million, control the produc-

tion of Metros, not only to the extent of monitoring the various processes but also to managing the stocks of components and sub-assemblies and further to ensuring production matches the sales orders received.

Interlinking

This involved a very complex interlinking of all the various computer systems and the development of control software which British Leyland is confident is more advanced than that used anywhere else in Europe.

The computer hierarchy starts with British Leyland's Communication and Data Centre at Redditch. This is rather misleadingly referred to by the company as its CDC, and the computers therein as CDC mainframes — which must irritate IBM and Amdahl.

This centre stores all the basic data on orders, stock items and so on, and communicates with the master computer at Longbridge as required via British Leyland's microwave network.

The master computer is the second level in the hierarchy, and consists of a dual DEC PDP-11/70. As the name suggests, it controls all the other 22 computers at Longbridge. It maintains its own file of orders outstanding, which is updated daily with the details of the previous day's production.

Also stored on this system is the weekly production programme, effectively a set of targets for each shift. Production is controlled by matching this production programme to the orders file to produce an actual list of cars to be built, taking into account the resources available.

Manages

This is more complicated than it sounds, as the specification of a given Metro varies according to several considerations — model type, colour, trim, engine size, market and so on.

The master control system records the progress of each vehicle as it moves through the plant, manages the store of unpainted car bodies, schedules the operations of the paint shop and then manages the progress of painted bodies through another store and into the finished assembly area.

Twice as interested as you thought you'd be?

Then contact Plessey Data Systems at Poole for full information.

It connects with six other systems dedicated to particular aspects of the production process, such as quality control, storage of body panels and production achievement monitoring.

The automated panel store is one of the most impressive aspects of the system: it is believed by British Leyland to be the first which is both managed and controlled by computer. It was developed both to speed up panel movement and to reduce volume storage requirements.

It stores about 200 different body parts, and has a capacity of 7,800 complete car sets. It operates 24 hours a day, pulling pallets of parts in and out at a rate of one every 57 seconds. Only five people are needed to run the store.

Issues plan

Movements into the store are determined by movements out of the store, which in turn depend on the production programme. So the logical first step in the process is the formulation of an issues plan, in the form of an exploded list of components required matched against timescale.

This is established in advance for each shift. It can be manually over-ridden according to body production progress, in which case adjustments are dynamically made by the computer to all other affected systems.

Once the issues plan has been established, the entry of new parts is directed in accordance. The idea here is that the cranes used in the warehouse should travel the shortest possible distance.

There are five aisles in the store, each with its own crane operating under the control of a Data General Nova 3. These computers and the conveyor belts used in the store are all under the control of a warehouse driver, a twin DEC PDP-11/34, which in turn communicates with the master computer.

The use of the warehouse driver ensures that the store can continue to operate even if both master computer processors go down. The warehouse driver instructs the crane control computers and controls incoming parts by directing them along a conveyor belt to a crane pick-up point.

The crane computers poll the cranes 50 times a second to establish

• Continued on page 17

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SYSTEM 90



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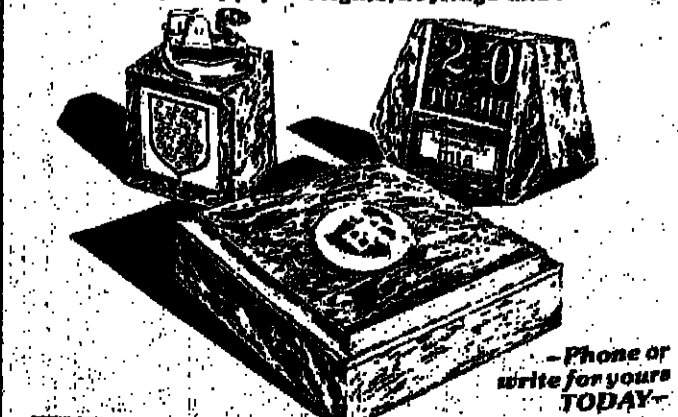
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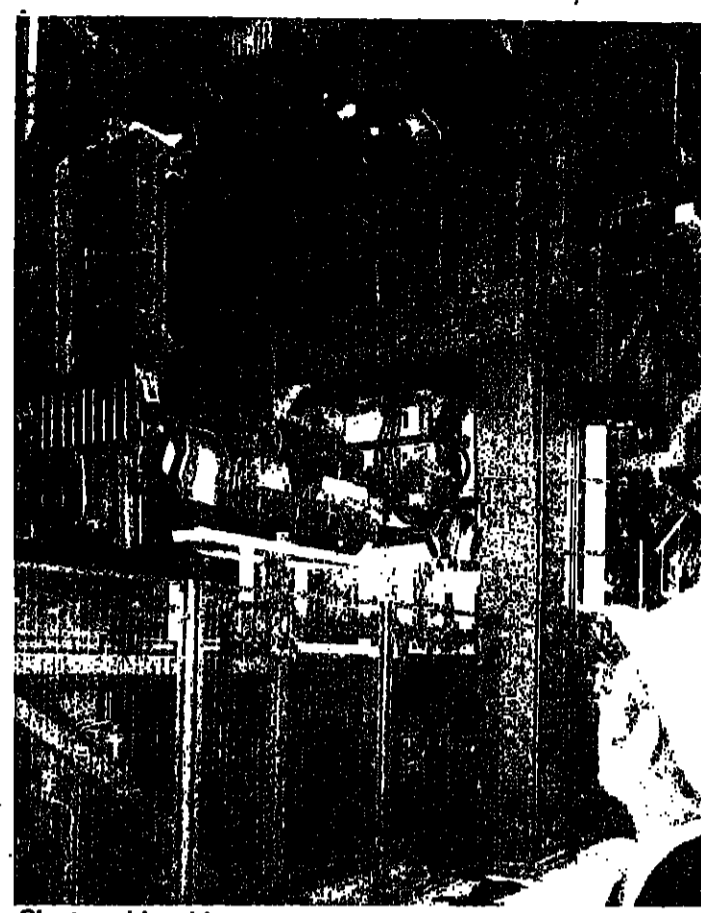
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How micros will help to save fuel

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By bringing the refinements of microelectronics to the crudities of internal combustion we will be able to drive the same distances with less fuel. The micro promises to let us have our cake and eat it too.

It helps to save fuel in two ways. Engine speed, crankshaft angle and manifold pressure are monitored to determine the optimum firing angle thus replacing mechanical timing. A second micro can provide carburettor control for the best fuel mix to engine speed ratio.

At the annual meeting of the British Association for the Advancement of Science, Professor M. J. Hampshire of Salford University said: "The trend is to combine these features, together with automatic transmission and cruise control, into one electronic engine control system."

He pointed to two major drawbacks which will have to be overcome before the micro based car is with us. These relate to software and to the severe conditions within an engine.

"One must ensure," said Professor Hampshire, "that a voltage spike present at some input to the microcomputer does not cause the program to jump to some random point in the stored software."

"Producing a complete software package for automatic transmission control which avoids these dangers is very difficult indeed. The development of a new philosophy of software structure is required to solve the problem."

Temperature

He said that in a motor vehicle, electronic components must contend with temperature variations from -40 to +125°C, high humidity, salt and oil sprays and vibration. Still harsher is the electrical environment where such things as jump starting, electric body welding and load dump create extremes of electrical noise.

A load dump occurs when the battery is disconnected whilst the engine is running causing the power bus to rise up to 140 volts for 400 microseconds.

Danger

There are, of course, political implications to petrol conservation. At the same meeting of the British Association, Energy Secretary David Howell said: "It would be fatal for us to assume in Britain that our own North Sea oil excuses us from the need to reduce oil dependence."

In his estimate there is at least a decade of danger ahead during which oil based economies will remain hopelessly vulnerable to OPEC oil policies, or political action around the world.

Apart from saving petrol the micro will contribute to safety by providing the intelligence for information display, anti-skid and suspension systems.

Professor Hampshire commented: "It is obvious from past experience that the public will never create a market force which will cause manufacturers to introduce safety systems."

"In fact the reverse is true, that the public generates market resistance to the price penalty incurred by introducing safety measures. This is a clear case for government action to liaise with the industry."

The combination of market forces and governmental pressure promises rich pickings for the semiconductor houses and those associated with them.

By 1990 it is predicted that electronic systems will account for 8% of the cost of a vehicle.

There are over 30 million cars produced worldwide every year. Volkswagen reckons that, by the end of the decade, each car will have up to 10 micros dotted around it.

That's 300 million computers. The calculation of profits on that lot should put a smile on any executive's face and give a pocket calculator indigestion.

— PAUL FISHER

Nick Enticknap sees how BL has switched to automation

'Master' updates progress map once every five seconds

• From page 16

list where they are and whether they are ready to receive the next instruction. The cranes recognise where they are via infra-red sensors which identify storage locations from code plates, and calculate their desired path by comparing this with internally stored map of locations.

Before being entered to the store, arriving goods are first checked to ensure that they conform to specification and then to see that their arrival was expected. This is done by reading a bar-coded label affixed to the side of each pallet.

The information contained on this is then compared by the master computer with information previously transmitted to it when the pallet left the factory. In the case of all body panels, this is the Pressed Steel Fisher works at Swindon.

For extra reliability, the store is organised on the principle that each aisle is equally loaded. Thus

if one of the cranes becomes inoperative the disruption is minimal.

When components leave the automated panel store, they then go through a variety of processes which end with the production of unpainted body shells. It is from this point to the arrival of the cars on the final trim lines that the computer control procedures are at their most complex.

These procedures include passing the cars into and out of an unpainted body store, sending them through the paint shop and then into and out of a painted body store. The objective is to ensure that all parts of the factory operate at maximum efficiency.

The unpainted body store has a capacity of 140 bodies held in 10 storage lanes. Control of this store is by three microprocessor-based programmable logic controllers (PLCs), which interact with the master computer.

This computer creates paint shift schedules according to the

production requirements, then selects bodies from the unpainted body store and batches them by colour for each of the three paint shops. To do this it maintains a map of the store showing what type of body is in each store location.

This map is updated every five seconds when the master computer polls the PLCs. The PLCs themselves identify the body types by the platens they are mounted on.

From this information and the paint shift schedules, the master computer is able to instruct the PLCs which platens to move to which location. Bodies are moved out of the store at a rate of one every 29 seconds; BL says this could not be achieved by manual means without introducing bottlenecks at other stages of the process.

After painting, the bodies are moved into another store, the painted body store, which like the unpainted panel store has one store control computer, a twin

DEC PDP-11/34, and five crane control computers, Data General Nova 3s. Bodies are moved out of this store into the assembly building under control of the master computer acting on information received from the 11/34s.

The sequencing of the movement of particular bodies is performed according to a complex set of requirements by an interactive procedure which continues until the optimum decision is arrived at. One build decision is taken on average every 42 seconds.

Other PDP 11/34 systems handle quality monitoring (in connection with the Redditch centre), matching finished vehicles to customer orders, and reporting on production achievement.

In addition, a Ferranti Argus controls an automated vehicle electrical testing system — the one British computer used. The reason for this is that the system is not new, but was developed some years ago for Jaguar cars.



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The DP task that is closest to the end user

MOST of the advances in system development methodologies have been made on the side of the programming effort. But although programming errors are one direct cause of costly and inflexible systems, many of the errors can be traced back to errors in the analysis and design stages.

What is fundamentally wrong with many approaches is that no method exists for analysing and describing the business, its data and how it operates, divorced from any considerations of how the system will eventually be designed in a compact, user-oriented way. It should be possible to analyse a business without any need to know which parts of the business may be computerised and which business functions will form the basis of computer systems. Indeed, it is impossible to perform an effective cost/benefit analysis of the computerisation of a business unless the business is fully understood.

Communication

In many approaches, the emphasis is placed on determining and analysing the "output required" (ie listings, reports, computer files, etc) — a dangerous practice in itself as information requirements are never static and then expressing the results in terms of computer files, English narrative descriptions (often long and complex) of the "processes required", and technical flowcharts of the flow of data through the system.

There is, therefore, an immediate need for an intermediate, compact "communication" tool, in order to verify with the user that the analyst has correctly interpreted what the business does and what it is interested in, in terms the user understands.

The results of this approach are apparent — inflexible systems which are not resilient to change and whose development is often unco-ordinated and fraught with problems. The

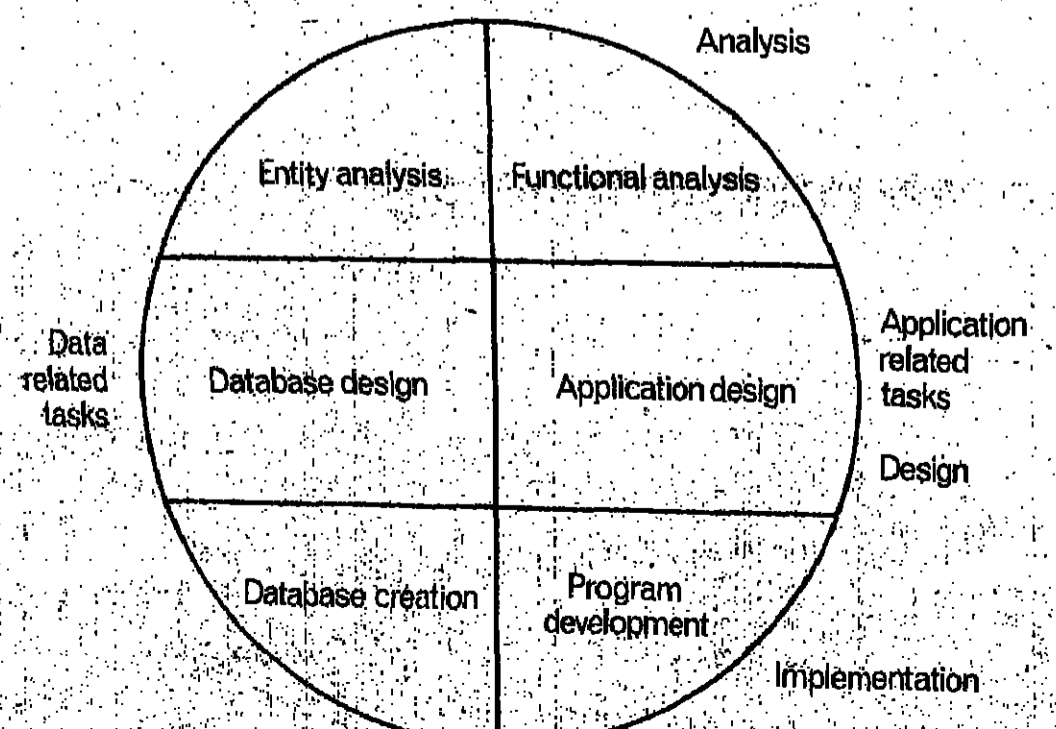


Figure 1. Data analysis as part of system design.

A great deal of space is devoted in computer publications to technical issues — new hardware, new software, new programming techniques and so on. The only reason the new hardware and software are produced or the programming techniques are developed, however, is because a user, somewhere, somehow, wants a computer system. The DP task closest to the end user is analysis, and in this series Ian

Section I Part 1

Palmer and Rosemary Rock-Evans describe Data Analysis, a method developed by the consultancy CACI.



Ian Palmer



Rosemary Rock-Evans

IAN PALMER is technical director of CACI. He produced the first book on database and has served on the Codasyl Data Description Language Committee for many years. He has been primarily responsible for the development of CACI's System Development methodology, and for the practical application of the techniques described in this series.

ROSEMARY ROCK-EVANS is a CACI consultant specialising in data analysis and database, and at present is working on exchange control in the National Bank of Belgium. In her previous position with British Steel she was responsible for the development of the BS Data Dictionary.

trois, in preparation for designing the logical database (the database when implemented using the DBMS).

Neglected

The data analysis methodology is centred on two fundamental principles. First, ana-

lysis must be undertaken of the business separately from any considerations of the technology which may eventually be used to implement the system.

As has previously been shown, without a rigid distinction between analysis of the business and design of the system it is impossible to insulate the end user from changes in the technology supporting his system. Conversely, it is difficult to design a system flexible enough to respond readily to changes in the user environment.

This series is primarily concerned with business analysis, which is typically neglected compared with the effort devoted to technical design.

Secondly, to design systems intended to share data between a variety of users, it is essential to analyse the data independently of the various applications which may use it. This avoids the trap of designing application dedicated files, tied to the specific problem the system is oriented towards solving.

Top down

Thus the analyst is forced to take the wider view with regard to the data and how the area under study fits into the overall business.

The analyst is not constrained by concentration on output requirements as in the conventional approaches, but considers the business data and its functions as a whole. Data analysis is

The 27 parts of the series will appear as two separate sections. Analysis is a sadly neglected area. Present methods tend to concentrate on the functional aspects of systems, and ignore the data aspect. Data analysis is a methodology which links the analysis of functions and data together into an integrated, disciplined, structured approach involving the end user. This series explains the basics of the approach.

thus a "top down" approach. Only later, when the relevant part of the business is fully understood, should the computer system design be developed. An assessment is then made of which business tasks could best be supported by computer systems and which tasks are better treated as manual procedures. For example, some tasks may be completed very infrequently and require excessive effort to translate into computer procedures, and these will be kept as manual tasks. The next step is to make a study on how the data is used and consequently how it can best be represented, given the restrictions of the DBMS, or file handling software.

In parallel

There are two main activities within the methodology: functional analysis and entity analysis.

Functional analysis is used to define the functions which make the business operate, for example handling orders, maintaining plant, controlling borrowing, paying staff.

Entity analysis is concerned with finding out what the business needs in order to operate, expressed in terms of the types of things it needs and the relevant facts about these things, for example, it may need people, plant, orders and accounts and it may need to know the date of birth, sex, and name of each person.

These two activities, functional analysis and entity analysis, are normally completed in parallel as complementary operations, each providing the other with better insight into the business.

Phases

Since details of both the data and its processing are essential to the design of an effective database, both activities are always used in preparation for database design.

Where the methodology is being used for other purposes, however, only one of the two may be necessary. The conversion of a system, for instance, depends very much on the structure of the data. When converting from one data structure to another — for example, from conventional files to database — both the source, data structure and the target data structure can usefully be compared using the results of entity analysis alone.

In Figure 1 the phases in data analysis are shown as part of the tasks involved in the design of a system.

Although its main use is in implementing large and complex database systems, data an-

alysis is a pragmatic approach developed to meet practical needs. Other major uses to which it has been put in the last five years are:

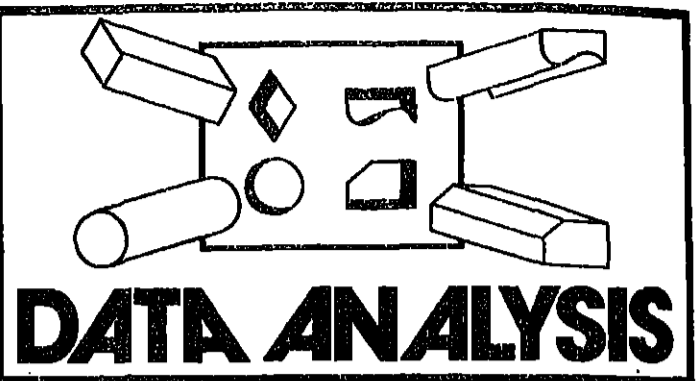
1. Evaluation of the suitability of application packages. The entities and functions inherent in the business are compared with those supported by the package.
2. Evaluation of the structuring capability of competing database management systems. The rival DBMSs are compared using the structure of the actual business data as a benchmark with which to test the ease of mapping the business to the DBMS.
3. System Conversion. The comparison of the data structure for conversion with the target data structure, indicates the simplest possible conversion process.
4. Data dictionary. Data analysis is an essential prerequisite for populating a data dictionary which is to be used for the development and maintenance of future applications.
5. Distributed processing. The investigation of the existing distribution of the entities and business functions indicates where distribution of data and processing could take place.
6. Application development strategies. The strategy is based on the evaluation of the business functions, to determine where computerisation would be most beneficial, and the clustering of those functions into logical applications for implementation.
7. Policy studies. Feasibility studies into the need for and viability of a database (or shared data environment) and transaction processing systems.
8. Data control systems, security and audit procedures. The nature of the existing data is examined and all the interconnections and redundancies documented. This process provides the basis for control and for security and audit procedures.
9. Organisation Studies. The study of a business' functions, related to who has to carry out the functions and how, indicates where the introduction of standard practices would help the enterprise, for example, where there is duplication of effort or inefficient allocation of tasks, and where new jobs might be needed or the responsibilities for existing jobs need to be reviewed.

Entity analysis

This article has introduced data analysis and explained the need for a disciplined analysis methodology, the principles, activities and practical uses of the approach.

The following five articles will deal with aspects of entity analysis, namely entity types, relationship types and entity modelling. They will be followed by articles dealing with aspects of functional analysis: functions, functional decomposition, dataflow diagrams, functional networks and entity life cycles.

Once these concepts have been explained, some of the valuable by-products of functional analysis and entity analysis will be considered, for example, how the results of these two activities may be used in the design of the system and data-base.



by Ian Palmer and Rosemary Rock-Evans

AT&T reorganises to enter the DP market

THE world's largest corporation, the American Telephone and Telegraph Company, AT&T has now approved the reorganisation of its headquarters and chief personnel, setting the stage for the formation of an unregulated subsidiary.

The moves, which took effect last month, include redesigning responsibilities for some top officers, the corporation's acquisition of \$1 billion worth of stock in four subsidiaries, the consolidation of Bell operating company pension funds, and the pulling together of AT&T's foreign business operations.

AT&T is big: it employs about a million people, has annual revenues of over \$45 billion and serves about 80 per cent of the telephones in the US through its subsidiaries. AT&T's wholly-owned manufacturing division, Western Electric, alone had sales

and separate it off."

Industry consultants the Yankee Group, headquartered in Cambridge, Massachusetts, are telling their clients that given a three-to-five year development time, the new unregulated subsidiary will be an "awesome competitor."

Some reshuffling of key executives is first among the moves aimed at forming the new unregulated subsidiary.

Robert E. Sugeman, former executive president of AT&T's Long Lines, is now president and chief executive officer of AT&T International, a consolidation of AT&T's business outside the US.

James E. Olson, vice-president of the AT&T board, is now responsible for all the company's de-regulated operations. Reporting to Olson are Thomas E. Bolger and Charles E. Hugel. Bolger is corporate executive vice-president and director of marketing and services activities. Hugel, also an executive vice-president, will direct residence marketing and services, as well as public services activities.

William M. Ellinghaus, AT&T's president, now has the responsibility of all corporate departments remaining regulated. Reporting to him now are Richard R. Hough, executive vice-president of networks, Kenneth J. Whalen, executive vice-president of regulatory and staff activities, and William G. Sharwell, vice-president of corporate planning and now a staff vice-president.

The second part of AT&T's re-organising is its acquisition through merger transactions, of the outstanding common stock it did not own in four of its telephone subsidiaries. The four are the Mountain States Telephone and Telegraph Company, New England Telephone and Telegraph Company, Pacific Northwest Bell Telephone Company and the Pacific Telephone and Telegraph Company. Also acquired were publicly held non-redeemable six per cent cumulative preferred Pacific Telephone shares.

Based on current market values, the combined worth of the mergers is about \$1 billion.

Prior to the deals, AT&T held about 89 per cent of Mountain State's stock, some 86 per cent of

AT&T is saying to IBM: 'You're not coming on our turf without us coming on yours.' And say: 'You ain't seen nothing yet, from either of them.'

New England's shares, about 89 per cent of Pacific Northwest's stock, some 90 per cent of Pacific Telephone's common stock and 78 per cent of its preferred stock.

The third movement of AT&T's shift is the transfer of Bell Company pension funds and plans. AT&T will consolidate the 33 separate Bell system funds and plans just two, one for management and one for employees. Total assets of these pension funds and plans are currently estimated at about \$28 billion.

The fourth part of AT&T's move is the establishment of AT&T International. This new company will consolidate Bell System interests outside the US formerly the responsibilities of American Electric International and American Bell International.

In all, the four moves involve quite a bit of activity. But an AT&T spokesperson says, "These are just the first steps. The future of our business is becoming clearer. We are now setting the

American Telephone and Telegraph Company has set the stage for the formation of an unregulated subsidiary which could be an "awesome competitor" in the DP market within three to five years. AT&T has about a million people on its payroll, and serves about 80% of the telephones in the US through its subsidiaries. Here PETER

KRASS describes the manoeuvres which are setting the scene for this giant company's foray into the data processing and communications marketplace.



ROBERT E. SUGEMAN (left), former executive president of AT&T's Long Lines, is now president and chief executive officer of AT&T International, a consolidation of AT&T's business outside the US.

One such analyst, H. Donald Haback, of consultants Gartner Group, says that ACS, while probably still two years down the road, will be part of AT&T's attempt to control all electronic office communications.

In July, Haback told his clients, "AT&T intends to compete head-on to maintain its leadership role." And he notes that the company's realignment is part of the realisation that it would have to compete directly with IBM and the rest of the data processing world.

"It will be interesting to watch IBM and AT&T. IBM will soon go into the private branch exchange (PBX) business in the US with its Satellite Business Systems. But AT&T is saying to IBM: 'You're not coming on our turf without us coming on yours.' And I say, 'You ain't seen nothing yet, from either of them.'"

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THE WORD PROCESSING SCENE

How the WP revolution affects US office workers

The so-called "office of the future" has already made its debut in the United States; a major role has been played by word processing. Sales of word processors are having a nice effect on the pockets of some vendors, as well as on the productivity of some offices.

According to Quantum Science Corp., a New York research group, \$1.4 billion worth of word processing equipment was shipped in the US last year, some 170,000 machines. By 1984, Quantum forecasts, annual word processing shipments in the US will be up to 750,000 units, worth some \$4 billion.

But what effect is the appearance and subsequent proliferation of these machines having on American office workers?

Most US word processor vendors have simplified the operation of their products in recent years. Today's word processing machines are much easier to use than are their predecessors of only five years ago. And this means that today's word processing operators need not be as skilled as their recent predecessors.

In addition, easier-to-use machines require less operator training. In some cases, training is limited to self-instruction literature provided with the equipment; this is how IBM will support its Displaywriter.

IBM calls the Displaywriter instructions "self-paced literature." That is, the user will learn how to operate the machine at his or her own speed. The company says that most people can learn complete operation of the Displaywriter in about five days.

According to a spokesperson from IBM's Office Products Division, which is marketing the machine, "The Displaywriter will be easy to learn, so we won't provide any stand-up training." In addition, he says, the company will supply users with a toll-free telephone number which they can call for assistance with Displaywriter problems.

One of America's largest vendors of standalone word processors, Lanier Business Products, provides its customers with operator training for one or two employees for up to three days. This training is included in the cost of Lanier's machines.

Reg Parker, Lanier's director of training, says, "Our task is to induce people to use the equipment after it has been bought. The users, mostly secretaries, are asking themselves, 'Is this machine here to replace me, or to help me?' Unless this dilemma is resolved, it's hard to get going."

Simple Parker adds that training users is part of the sale for Lanier. "Two people are involved," he explains. "The decision-maker, who has the money and the authority to buy the machine, and the actual user. Sales are aimed at the decision-maker. But training caters to the user. This, in turn, pleases the decision-maker. Our philosophy is quite simple: training is part of the product."

Beyond this initial training, Lanier offers two additional service plans. The first is called the extended support guarantee. It is contracted one year at a time, and costs \$144 per word processing unit. The plan includes training for specialised applications and continued service.

The other plan, called interim support service, costs the user \$35 an hour. It is used by offices with relatively simple applications, those that need Lanier's assistance only occasionally.

Why are these additional service plans needed? Lanier's Parker says that as many companies add new word processing machines and applications over time, they find that they need Lanier's additional instruction and advice.

Wang Laboratories, another large American vendor of word processors, gives its customers tape-recorded, self-paced instruction programs. The company has several regional centres, staffed by its own instructors, to which Wang users send their personnel for training.

According to Dale Kutnick, of industry consultants The Yankee Group, economy is the root of to-

day's easier-to-use machines. "Word processing users want lower prices, so the vendors have to cut prices," Kutnick explains. "So, away goes most training. The vendors are unbundling everything, including instruction. And the newer equipment is easier to use, so a lot of training is unnecessary."

Ergonomics As competition in the US word processing arena tightens, vendors are continually looking for new ways to get ahead of each other. Some have found that attention to ergonomics is paying off. Ergonomics is the science of applying biological and engineering knowledge to the problems of people using machines. Some vendors call this "human factors."

It can be as simple as designing a video display screen that can be tilted to suit the operator's height, or as complex as controlling radiation leakage from the screen.

Some industry consultants have recently applauded IBM's work in this area, particularly on the design of the Displaywriter. The company has built a system, they say, that is pleasant and easy to use.

But vendors' attention to ergonomics is, at best, spotty. According to Brett Martensen, vice-president of technology for Canadian consultants Technetronic Inc., "You need the right chair, the right keyboard, the right lighting. Some companies are quite good at this; others are not so good."

But no matter how well-designed equipment may be, some word processors may be hazardous to users' mental and physical health. Working at a word processor equipped with a VDU is stressful, says Karen Nussbaum, executive director of Working Women, an American association of office workers. The closest thing to an office workers' union (without actually being one), Working Women has affiliate groups in 12 American cities.

"The machine, not the operator, sets the pace of work," Nussbaum explains. "And this causes stress. Some screens give off a lot of glare, or have poor resolution. This can cause hypertension, nausea, eye and back strain. So, we say that people should not have to work at VDUs for a long time. It's unhealthy."

But some industry experts say that claims of dangerous automation are groundless. Amy Wohl, president of industry consultants Advanced Office Products, says that today there is no such evidence, and that there probably will not be any soon.



The IBM Displaywriter system is supplied with "self-paced" literature, which enables the user to learn to operate the system at his or her own speed — about five days for most people, says IBM.

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"I didn't get where I am today by not knowing about word processing." C.J.'s secretary is operating the Canon-built AES Plus, sold by Lanier in the US as the "No Problem" word processor.

'Smaller groups of better employees'

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from the worker to the manager," he explains. "These machines are not programmed by those that use them. They're loyal to management."

Philip Dorn, a New York-based office automation consultant and the author of several articles on the subject, is also concerned with some of word processing's heftier problems. Like Kraft, he believes that office automation is polarising society. But unlike the sociologist, Dorn maintains that automation will push those on the bottom of society out of work. "If we fully automate everything, we're in big trouble," he says.

"The office workers that remain after word processors are installed must be smarter, not less intelligent. We'll see smaller groups of better workers — the ones that remain must make decisions. But it's depressing when you think of what happens to those at the bottom — those with low skills and little education. If automation pushes enough people out, the next thing you get is a revolution."

Dorn says that the American government should address the issues of office automation. But, he says, it does not care to. "Here in the US, the slant within the government is toward management. In some of the socialist European countries, there is a genuine concern for workers."

But Dorn points out that solutions to these problems are not easy. "A solution like a no-lay-off policy, for example, sounds nice. It creates work. But it also runs prices up, resulting in zero exports. There do not seem to be any real solutions. But I know there is a problem."

Negative effect

On exception to the office automation dilemma, Dorn says, is the American law firm. All lawyers, he explains, insist on having their own secretary. They are not going to trade a person for a machine. Rather they equip their secretaries with some high technology machinery, typically a word processor. In this way, productivity goes up without destroying jobs.

In many cases, use of word processors specialises work. And according to Working Women executive Nussbaum, this has a negative effect on office workers' psyche and self-satisfaction. "Although many people like the new machines when they make work easier or more enjoyable, in some cases, the rewards of clerical work are eliminated," she says.

"Work is being broken into more specialised jobs that are often boring and highly repetitive. And the rewards, pride in a job well done, meeting other people in the company, following through on a task from beginning to end, are removed. We'd like to see jobs that maintain variety."

Shortage

One result of the new office technology is a current shortage of qualified word processing operators. In fact, consultant Wohl says, there is a shortage of good secretaries in general. And as a result, salaries for word processing operators can be 75% to 100% higher than those for clerical workers.

In addition, Wohl predicts, freelance word processing operating and training will become a major industry. In several large cities, there is already a sizeable market for freelance word processor operators. According to Vincent Gordon, of New York's Avis-on-Park employment agency, it is "definitely hard to find competent word processing operators. We've got lots of jobs for them."

Boredom

"In 30 years of government testing, there's been no proof of cancer or eye damage from video display screens," she said. "If it hasn't turned up yet, well... I guess it is useful that people worry about these things. I don't think anyone will ever find any health hazards, and this would be reassuring."

On a less dramatic note, Working Women's Nussbaum says that working at word processors is dull. It may not constitute a major health hazard, she says, but it does lessen workers' job satisfaction.

But according to Technetronic's Martensen, clerical boredom may be inescapable. "One result of high technology is boredom," he says. "Word processing is very dull once the operation is learned. Other industry watchers have raised some weighty questions about the social impact of word processors and other office automation. One such thinker is Philip Kraft, a sociologist with the State University of New York, in Binghamton, New York.

Polarisation

According to Kraft, "the introduction of word processors is an attempt to industrialise white collar workers in the same way we industrialised craftsmen and artisans in the past. It's the continuation of an old struggle. The idea is to replace skilled people with unskilled people."

Kraft believes that office automation will polarise the workplace. On one hand will be a relatively small group of designers, technicians and programmers, the "smart" people. On the other will be a larger group of machine tenders. "Stupid workers and smart machines are the goal for every manager in the workplace," Kraft explains.

The New York scholar adds that management control and cost cutting are the goals of users of the new word processing equipment. "Everything else the vendors say is hype," he says. "Control and cost are the reverse sides of the same coin. And the microprocessor is making this both obvious and widespread."

Trouble

Kraft insists that automation itself is neither bad nor good. It's how it is used that matters, he says. And today, Kraft adds, it is being used as part of a shift. "There is a transfer of control

A two-page review by Peter Krass



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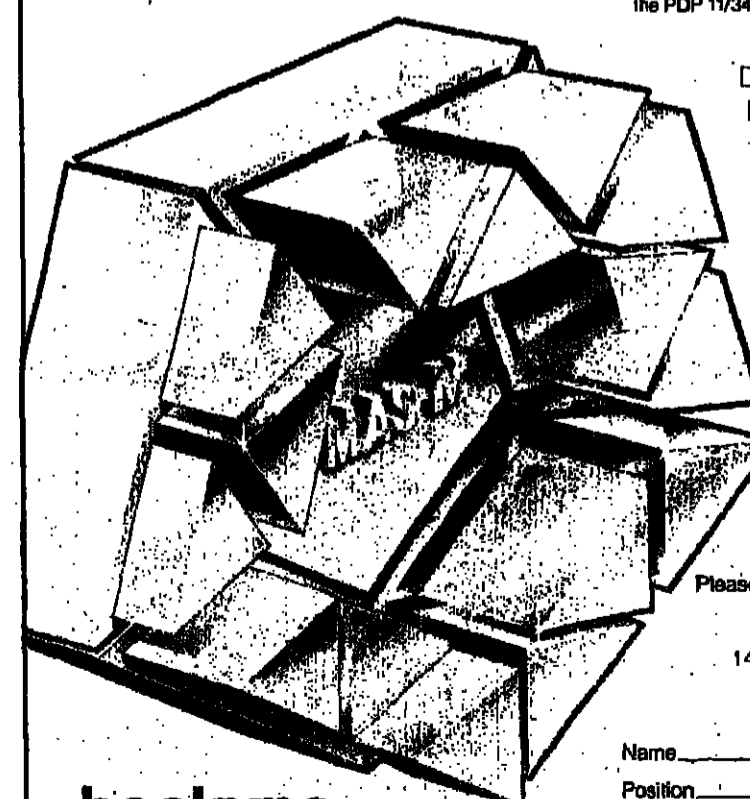
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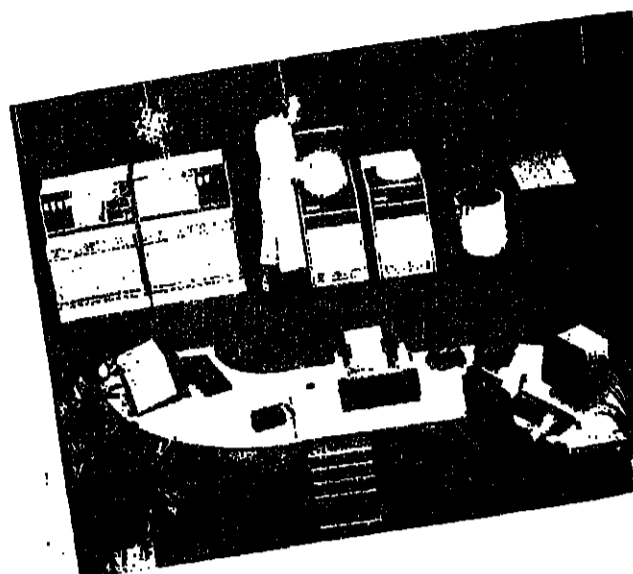
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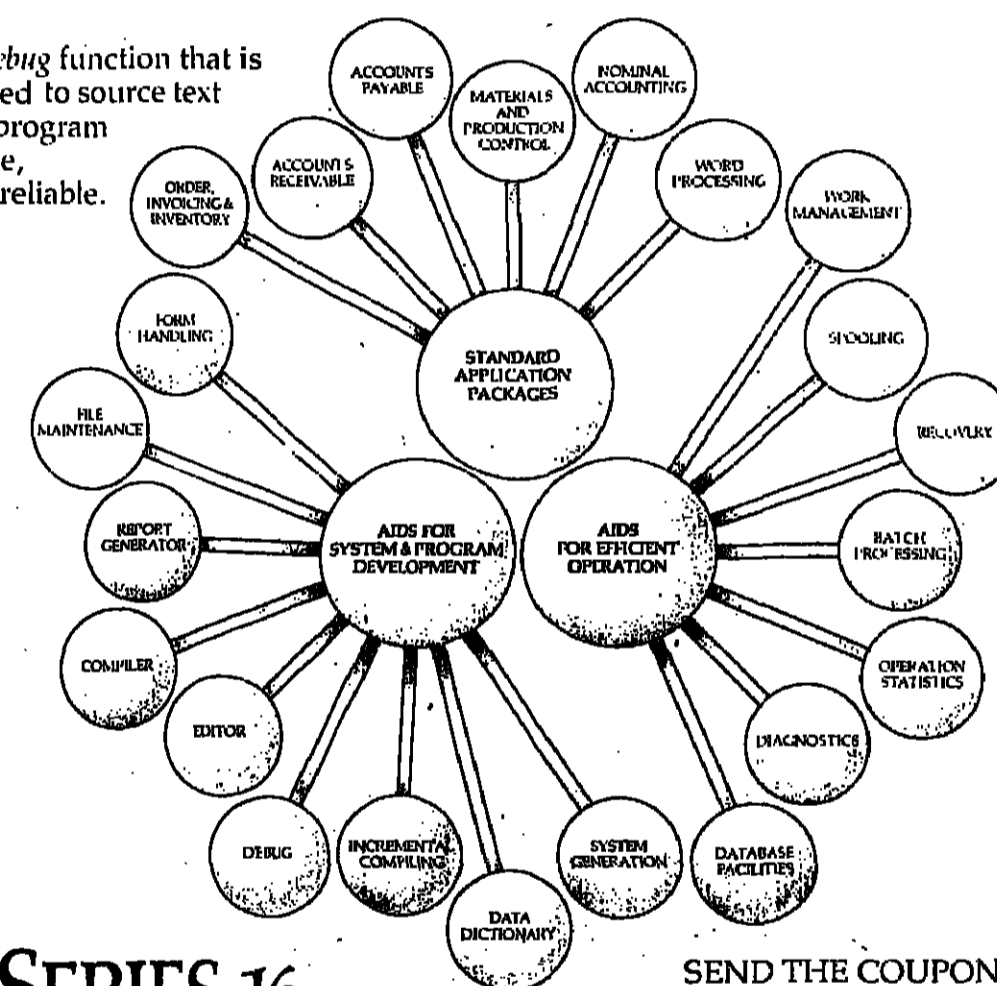
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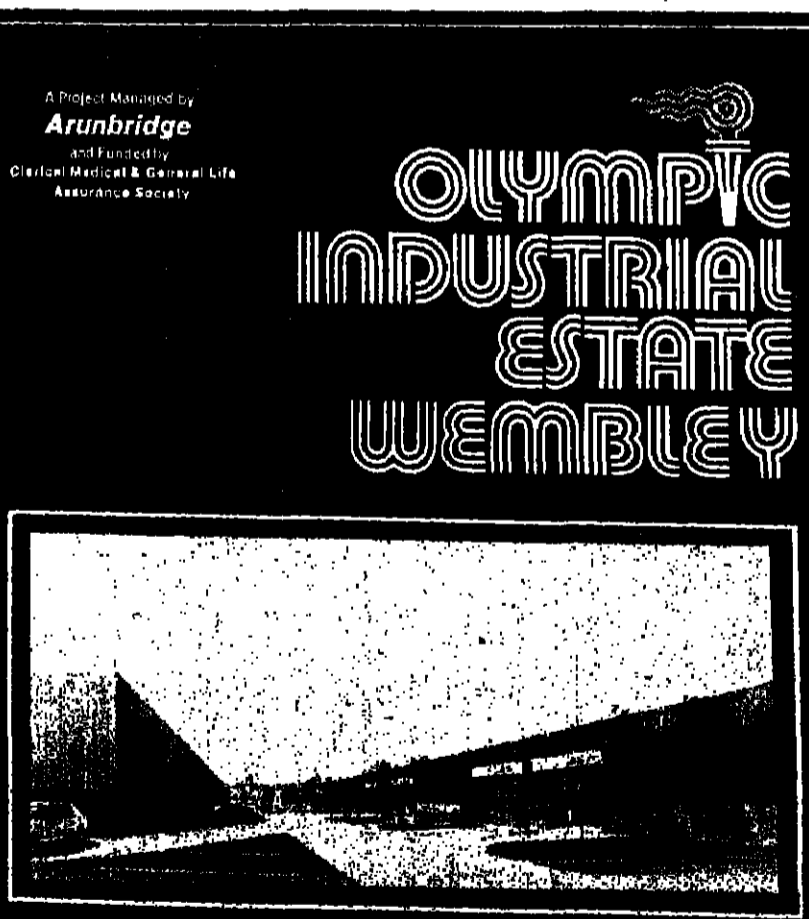
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Switzerland: Salaries to £15K (equivalent)

Our client has a justifiably enviable reputation as a Semi-conductor Equipment Supplier. Its manufacturing and software development Headquarters is situated near Zurich. We have an exclusive assignment to recruit several Software Development Engineers to join the Company's permanent staff. Emphasis will be placed on technical achievement and in-depth industrial/practical experience. A Bachelor or Masters Degree in Electronics, Electrical Engineering or Computer Sciences is a desirable asset. Additionally, all candidates must offer a minimum of four years' microprocessor software development. There is a preference for those fully familiar with Motorola 6800 hardware and software, although, of course, respondents will be considered who have had in-depth ex-

perience with Intel 8085/R, Zilog Z80/Z800 or Fairchild Systems Software. It is preferable to offer some German language ability for social/cultural reasons as much as for the working environment. Of prime importance is a real enthusiasm to relocate to Switzerland for a minimum period of 2 years. Every assistance will be given in relocation including the cost of removal of all personal effects and the provision of temporary accommodation until such time as you are settled in a permanent apartment. Our client offers an above-average salary together with an unrivalled range of ancillary fringe benefits. Initial screening interviews will take place in London after which short-listed candidates will spend one day at the Company's premises. Ref: L/40/C

Micro Support

Central London: Salaries to £8K + Car

Our client is a leading Micro-Computer Manufacturer based in Central London. The rapid increase in sales of its Business Systems has created vacancies for additional Micro Service Engineers and Software Support Programmers to maintain and enhance its reputation for outstanding post-sales hardware and software support. As a Micro Service Engineer you will support the increasing customer base of microcomputer systems and terminal products. Full training will be given to young, ambitious engineers with an in-depth

knowledge of Electronic Engineering and Microprocessor techniques. Software Support Programmers should offer at least one year's BASIC or PASCAL programming experience on any mini or preferably microcomputer, in addition to a sound Software programming background, interest in Personal Computing will be a distinct advantage. For all positions, candidates must demonstrate the ability to liaise with customers and solve any problems which may arise both quickly and professionally. Ref: L/40/D

H. P. Scientific Programmers

Netherlands: Salary to £16K

Fluency in FORTRAN, gained from continuous exposure to scientific applications for a minimum of 3 years, is the prime requirement of our client. During this period, candidates will preferably have been exposed to Hewlett Packard 21MX, 1000/3000 series hardware in an on-line environment. Since the company is one of

the leading Continental Total Systems Suppliers, suitable applicants will currently be employed by a similarly successful company. Applications areas include graphics, signal processing, flight control path analysis. Those working for military or process control orientated companies will therefore be of particular interest. Ref: L/40/E

Process Control Programmers

Greater and Inner London: Salary to £10K

A leading supplier of Industrial Processing and Control Systems with London-based Headquarters and a Manchester regional office is seeking to recruit Programmers with one to five years' Programming and Systems experience. All applicants should offer at least one year's post-graduate programming experience in ASSEMBLER, PASCAL or BASIC, preferably in a real-time environment. Whilst this is not essential,

for candidates to have a micro background, preference will be shown to those able to demonstrate involvement with Intel, Zilog, Motorola or Ferranti based systems. There is a possibility of overseas assignments. The Company's German office for short or long-term assignments. Salaries offered will, naturally, reflect the experience and potential of applicants but will certainly be generous. Ref: L/40/F

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TOP TURKEY SALESMEN

Midlands — £12,000-£20,000 package earnings

EMS urgently need sales performers with a proven track record capable of marketing a minimum £200,000 worth of mini computer based systems to large industrial software revenues. We are at the present time involved in extensively marketing advanced and fully integrated on-line systems to the manufacturing, stockholding and distribution base throughout the UK, and urgently need highly motivated, experienced sales representatives capable of assisting us rapidly expand our marketing activities during the coming year. Sales support will be given in the areas of customer advertising, mail shooting, group seminars, occasional exhibition attendance and other special marketing techniques used in-house. We will assist in seeking convincing experience and a level of salesmen capable of marketing relatively early business with a minimum of group supervision. We are only seeking proven and experienced salesmen who can become involved in a fast growing organisation and produce high personal sales based on individual merit. There are no cut offs applied to sales earning levels and an opportunity for hardworking, conscientious salesmen to be involved in a business which is dramatically increasing their own personal earning levels based upon results achieved. We have an extensive series of projects, quite dramatic plans for a successful salesforce during the 1980s. Contact us initially in the first instance for a meeting at our Birmingham Data Centre. Telephone No. 021-454 7906. John Wood or Diane Bosworth.

BANKING SYSTEMS

London — £7,000-£12,000

A number of clients urgently seek experienced Analysts and Programmers accustomed to building software in the Banking, Financial or Commercial sectors. A variety of positions exist enabling candidates to work on interesting systems including real-time, database and a wide variety of variable applications projects. Attractive fringe benefits exist, including low cost mortgage schemes and low cost bank loans. Telephone No. 0782-623665. Carol Atrak.

PROJECT MANAGERS/SYSTEMS DESIGNERS

Birmingham — c. £9,000

The EMS Group are seeking additional experienced Project Managers capable of effective man management and able to handle multiple projects to enable us to install an increasing number of turnkey systems during 1981. The company already has a significant base of on-line modularized software developed and the majority of tasks will involve building enhancements to pre-established systems and both planning and controlling system testing prior to client installation for a wide variety of UK products. A sound systems design knowledge as well as the ability to undertake feasibility studies and prepare accurate systems specifications on client requirements throughout a wide range of industrial and commercial trading sectors. Sound business communication is important, as will be the ability to control staff and effectively motivate a team with sound leadership abilities. We seek candidates able to accept a degree of pressure working to tight deadlines in a number of systems volatile industries. We do not envisage candidates under 28 years of age having attained the relevant degree of manpower control experience. Salaries will be negotiable with the opportunity of acquiring a company car for relevant positions once candidates have proven their ability to perform satisfactorily at a Senior Project Manager level. We seek Managers capable of promoting and maintaining effectively designed systems in a disciplined and well-documented environment which will need their personal control and responsibility. We offer an interesting and varied range of projects, good future career development opportunities for key performers. Telephone No. 021-454 7906. Ian Gapper.

ANALYSTS

NORTH WEST — c. £10,000 packages

EMS urgently require a significant number of experienced systems staff, preferably qualified to a minimum 'A' level standard. Candidates must have at least 5 years' total data processing experience with a minimum 3 years in the systems sector. Experience in working from initial feasibility study through to final implementation with at least 2 major projects will be sought. We have a number of large on-going projects in the merchandising and distribution sectors and require experienced Analysts capable of communicating effectively with the client users and assisting with large project team activities with a minimum of supervision. Excellent salaries and fringe benefits exist. Contact us urgently. Telephone No. 0782-623665. Colin Phillips.

ANALYST PROGRAMMERS AND PROGRAMMERS

Hampshire — Up to £8,500

Our clients are shortly to acquire a new Honeywell DPS4 model and require 2 additional Programmers with a minimum of 3 years' Cobol experience to start working on a variety of commercial control systems. Any experience of IDS2 and Honeywell Series 80 would be a significant advantage. In addition, the Analyst Programmer should have extensive experience in analysis and design of TP systems. The work will involve full development of major commercial processing and administrative routines which are at present deployed on 2 mini computers. Database techniques will be extensively used. There will be a considerable amount of overtime working for at least the next 3 years during the introduction of the new computer. Overtime is paid for at 1 1/2 times the basic hourly rate. Telephone No. 0782-623665. Carol Atrak.

SYSTEMS PROGRAMMER

Wiltshire — Up to £8,000

A large industrial group with an IBM 3031 are planning to change the system over from OS to MVS and to add further memory to the existing hardware. In addition, they will be taking a 4.5 megabyte machine over the next year. We urgently seek an experienced Systems Programmer with sound MVS knowledge of a minimum 2 years' and also good knowledge of VTAM. A wide variety of interesting projects exist and a sound career opportunity is available for relatively experienced candidates. Relocation expenses will be paid where applicable. Telephone No. 0782-623665. Carol Atrak.

ANALYST PROGRAMMER — MIDDLESEX

To £8,500

A large industrial group using an IBM 4300 Series mainframe require additional experienced Cobol Analyst Programmers able to work on batch systems developing project cost control applications in the areas of nominal ledger, materials control and payroll. All candidates should have a minimum 3 years' Cobol in an IBM mainframe environment. The system runs under DOS/VSE. Telephone No. 0782-623665. Carol Atrak.

COMPUTER OPERATIONS SUPERVISOR

Mid Glamorgan — c. £8,500

Our clients are seeking a candidate with a minimum 8 years' Operations experience of ICL machines. The particular installation is using an ICL 2804/50 with EDS 80s, MT and 7602 local and remote communications. Candidates should have experience of Exec 2 or George 2 operating systems and utility. The post is based at the headquarters of a manufacturing group in the electronics industry. The installation is sited on the South Wales coast. Shift working is not required. Apply urgently for early interviews. Telephone No. 021-454 7906. Diane Bosworth.

PROGS. ANALYSTS AND DESIGNERS

KUWAIT — 20-30K packages. Tax Free

Kuwait's leading consultancy urgently needs many more experienced IBM, Burroughs and NCR staff to work on a growing range of new systems development work. Interviews will be taking place in London during the 3rd and 4th weeks of October. Apply urgently for application form today. Consultant: John Wood — 0782-623665

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Honeywell Analysts and Programmers — Numerous Vacancies — 6-18 months.
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Progs — UNIVAC 1100 — Error B — Assembler — Manchester — 3-8 months
IBM — Cobol Progs — IMS — Manchester — 6-12 months
IBM Analysts & Progs — Cobol — PL1 — Sheffield — 6-12 months
IBM Analysts & Progs — Yorks — CICS — IMS — 6-18 months.

MIDLANDS

PL1 Progs. — IBM — IMS — Birmingham — 6-12 months
UNIVAC 1100 — Cobol — Progs. — Birmingham — 6-12 months
IBM — Cobol — PL1 — CICS — Progs. — Oxford — 6-12 months
DEC — RSTS — MACRO 11 — Birmingham — 6-12 months

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SENIOR ANALYST — Life Assurance — IBM — S. Coast — 6-12 months
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Honeywell — IDS/TDS — Cobol — Progs — Surrey — 6 months +
Progs — CMC — Reading — BASIC — Somerset — 6 months +
Honeywell L86 — IDS2 — Cobol — Progs — Essex — 6-12 months
PL1 Progs. — IBM — OS — CICS — Kent — 6-12 months
IBM Systems Progs. — DOS/VS — Assembler — CICS — Essex — 4-6 months
IBM — Cobol — Progs. — DOS/VS — Essex — 6 months +
DPD 11 — Cobol — Progs — RSX 11/RS15 — London — 3 months
IBM Systems Progs. — Assembler — CICS — DOS/VS — Essex — 6 months

ASSEMBLER PROGRAMMERS

Liverpool — c. £6,500

Our clients are a large and very successful merchandising organisation who have recently acquired their first IBM mainframe. At the present time they are developing prototype systems for the point of sale market and urgently require experienced Assembler Programmers to help set-up basic control systems. Career opportunities are excellent. Attractive relocation facilities will be provided. Interesting on-going project development experience is assured with this leading commercial group. Telephone No. 0782-623665. Colin Phillips.

TECHNICAL SUPPORT MANAGER

Surrey — c. £10,000 + Car

Our clients urgently require a top Technical Support Manager for hardware and software maintenance services to 50+ mini computer installations throughout the UK. He will be responsible for the management and budgetary control of a team of 4 highly skilled hardware and software specialists. Duties will include the following functions:

1. Problem solving both hardware and software faults at customer sites.
2. Liaison with manufacturers of the original equipment supplied with particular reference to technical support, quality control, warranty claims, training, new equipment appraisal and spares availability.
3. He will also be responsible for liaison with third party hardware maintenance companies and will monitor their performance on behalf of the clients.
4. Budgetary and financial controls.
5. Staff performance and motivation.
6. Liaison with sales departments regarding up-grades of existing equipment and the identification of prospective new installations.

Candidates must have a minimum 5 years' Data Processing experience with at least 3 years recently deployed within the micro processor sector. An additional 2 years' management experience with some administrative and commercial managerial responsibility is required. The clients would prefer an electronic engineering qualification. They are seeking candidates aged between 30-40, able to work in a high pressure environment and have good customer communication ability. Telephone No. 0782-623665. Carol Atrak.

SYSTEMS PROGRAMMING MANAGER

Berkshire — c. £8,500 + Car

Our clients, an industrial group, are seeking a new Systems Programming Manager who will report to the Group Systems Manager. Candidates should preferably have mini computer experience and a knowledge of IBM hardware would be particularly attractive. The company currently employs in excess of 2,000 staff within the group. There are 2 main locations and 4 sales locations with each unit having their own systems operations. This managerial appointment necessitates standing in for any of the managers during their absence and taking responsibility for assistance with any training required and any operations problem. The post will also involve the implementation of software packages, advising and recommending the feasibility of software packages throughout the group, and holding regular discussions with the General Manager about new systems requirements. Telephone No. 0782-623665. Carol Atrak.

ANALYSTS AND PROGRAMMERS

Staffs — Up to £9,000

A major industrial group with a large Honeywell hardware investment are seeking a further number of experienced systems and programming staff who can make a positive and immediate contribution to project development. All staff should have acquired a minimum 2 years' previous Cobol programming experience. Ability to program Fortran would be an additional advantage. A wide variety of commercial and industrial systems are currently being developed. These appointments offer an excellent opportunity for many years involvement in on-going major systems and network project activities. Telephone No. 0782-623665. Carol Atrak.

Mini Computer Software Development

W. London/Berkshire

To £11,000

We are recruiting on behalf of an established American company who produce high performance 32 BIT mini computer systems for the TRANSACTION PROCESSING MARKET. With many new exciting developments taking place at their Berkshire H.Q., they have a requirement for an additional Designer/Programmer to work on an advanced database management system. The successful applicant will join a small professional project team which has total responsibility for

the development of the product. Ideally he or she should have 3-4 years D.P. experience in Assembler programming and systems design. This Company is highly recommended and offers a promising and rewarding future to those portraying dedication and enthusiasm. All the normal benefits associated with a company of this status can be expected.

For further information please contact Eddie or Mike Howard or just complete the coupon.

Technical/Scientific

To £11,000



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PARAMIN was formed in 1974. To date they have offices in the USA, Europe and the UK, with several major projects to their credit in these countries, as well as Canada and Japan. PARAMIN UK are currently seeking experienced personnel to progress with the company into the 80s, working on extremely interesting projects. They require individuals from a scientific/technical background with a degree in Computer Science and at least two years' Coral Pascal Fortran or RT2 on minis or micro. You should be familiar with one or

more of the following areas: REAL TIME SYSTEMS, BASIC SOFTWARE, ROBOTICS, OPERATING SYSTEMS, A.T.E., PROCESS CONTROL and, in total, you should have a minimum of five years' experience in computing. PARAMIN has a very successful track record; this has been achieved through sound principles and standards. Develop your career with PARAMIN. For further information please contact Mike or Eddie Howard or just complete the coupon.

Consultants Systems Analysts

LONDON & H.C.

SALARY TO to £16,000

A highly respected Systems Consultancy based in Central London require business minded Systems Analysts and Consultants to maintain and develop new business. You will be involved with many interesting aspects of this company's business, i.e. client proposals, presentation, on site development and overseeing work to final completion.

It is important that applicants are adaptable, articulate, neat in presentation and possess a high degree of technical competence. Mobility is also a requirement and opportunities for foreign travel are available. This is a highly reputable organisation implementing top level management for many years. For further information please contact Eddie or Mike Howard or just complete the coupon.

Cobol PL/1 Assembler

Edmund Howard & Partners have been established for some years, successfully recruiting all levels of personnel for a wide selection of Blue Chip Companies throughout the U.K. and Europe. Right now we have some key appointments requiring different levels of experience in user con-

sultancy and financial environments. If your experience covers any of the above languages we would be very pleased to hear from you, we won't waste your time. For further information please contact Eddie or Mike Howard or just complete the coupon.

Cosmos Systems Analyst

* Concessional Holidays * Latest Technology * £ good neg.

COSMOS AIR HOLIDAYS has its HQ in Bromley, Kent. As a leading tour operator taking thousands of holiday makers to different parts of the globe each year, they will be very dependent on powerful computer backing. Currently they are preparing for a major upgrade this will be a large network of the very latest ICL ME29 computers utilising on-line and real-time transaction processing. They require an experienced Analyst

who has seen at least one project through to implementation possessing some knowledge of ICL hardware/utilities or travel applications. A Cobol background would be a bonus point. All in all this is a very good appointment offering the usual benefits associated with the holiday business. A good salary is offered, along with plenty of challenging projects, long and short term.

DEC IBM MODCOMP DG

UK & Holland

SYSTEMS TECHNOLOGY are a young, dynamic systems house dedicated to the design and development of complex computer systems. Based in Central London, with clients throughout the south of England and parts of Europe, they plan to open an office in Holland in the near future. They are currently undergoing a planned phase of growth and wish to attract young enthusiastic individuals with a degree or equivalent in a numerate discipline offering 1-3 years experience in any of the following areas.

- PROCESS CONTROL
 - BASIC SOFTWARE
 - REAL TIME SYSTEMS
 - SCIENTIFIC PROGRAMMING
- This is an excellent time to team up with a highly successful company who are still young enough to recognise and appreciate dedication and determination. Career opportunities are excellent, offering variety and scope on projects in the U.K. and Europe. For further information please contact Eddie or Mike Howard or just complete the coupon.

UK & Overseas Systems Programmers Technical Authors

Here is an excellent opportunity for technically minded individuals with an interest in either systems programming or technical writing. A leading computer manufacturer is now recruiting additional personnel to meet the demands of a rapidly expanding section of the industry. PROGRAMMERS with a minimum of two years' technical experience will be involved in a variety of projects ranging from software design and development through to final testing and implementation prior to general release. TECHNICAL AUTHORS with some

previous experience in the production of technical specifications and software manuals will be required to work in close association with both software design and product test teams. Applicants should be prepared to tackle and solve all manner of problems and maintain a high standard of documentation at every stage. Rapid career advancement is envisaged for those with the right background, qualities and experience. For further information please contact Mike or Eddie Howard or just complete the coupon.

NAME	
ADDRESS	
TEL (Home)	TEL (Work)
POSITION APPLIED FOR	

Edmund Howard & Partners

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61/63 Lower Street
Newcastle-under-Lyme Staffs ST5 2RS
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MYRIAD

COBOL + INITIATIVE

LONDON, WC1 c. £8,000

This position is not for the person who likes a structured and formal D.P. department but more for someone who is seeking to expand their own ideas under minimal supervision. The successful applicant will join a small team providing an in-house service to a group of professional personnel whilst also developing an intricate on-line system that will be marketed to a wide range of clients on a bureau basis. This very comprehensive package is being written in COBOL under TDS on Honeywell equipment and the person appointed will be given outline system specifications from which to develop and implement significant areas of the suite.

The Company also relies on real-time processing for internal applications and therefore the D.P. team is continually responding to user requests for amendments and enhancements. All programming is on-line, utilising the latest Honeywell technology which includes advanced editing features, video effects and graphics on 7800 VDUs.

A sound COBOL background is of prime importance but a knowledge of FORTRAN of RPG II will be an asset. Candidates will use their analysis skills to liaise with non-computer staff in order to understand and solve a variety of problems as they arise. Additionally, a good academic standard is required coupled with the personality and enthusiasm to operate effectively using his/her own initiative.

REF. S1/0210

SENIOR ANALYST FOR DATABASE ADMINISTRATION

THE CITY circa £12,000

Our client is one of the largest of its kind in the U.K. whose operations encompass a wide range of financial and commercial operations including insurance, broking, merchant banking and international trade.

Due to a recent reorganisation of the Company, they are seeking a SENIOR ANALYST to strengthen the Database Administration Group. The job will undoubtedly prove challenging since it entails all aspects of database administration from consultancy at the feasibility stage; through detailed data/functional analysis and database design; to implementation and control of the corporate on-line databases.

We feel the necessary requirements are:

- * FIVE YEARS' D.P. EXPERIENCE
- * A SOLID PROGRAMMING AND SYSTEMS BACKGROUND
- * EXPOSURE TO IMS TECHNIQUES
- * DATABASE DESIGN EXPERIENCE

This is considered an important appointment since the Company is firmly committed to the development of on-line database systems utilising IBM products and in addition to an excellent salary the Company will provide training in this specialised field. Additional benefits are commensurate with other major organisations.

REF. S2/0210

COULD YOU BE A RECRUITMENT CONSULTANT?

LONDON £8,000-£12,000

If you are interested in recruitment but do not have the necessary experience Myriad may be able to give you the opportunity to train as a Recruitment Consultant. If you have recruitment experience then Myriad could offer the opportunity for you to progress your career with one of the major companies in this field. With a well-established professional reputation, we have the scope resources and expertise to develop the skills needed to succeed in this challenging and rewarding work.

You must have a background in the computer industry, such as programming, analysis or any related sales oriented position. Without this essential grounding you could not be expected to give career advice to applicants or advise clients in major recruitment assignments. Under 30, you should possess the potential to succeed in highly sales oriented situations in which you will have the freedom to work very much on your own initiative.

The wide range of activities encompassed by the work will undoubtedly surprise you. You will also be interested in your training and career development. To find out the answers and much more about the varied and interesting life as a recruitment consultant, contact us to arrange an informal discussion and we will also tell you about the outstanding long-term career opportunities available.

REF. AW1/0210

CONSIDERED D.P. SALES WITHOUT COLD-CALLING?

C. LONDON UP TO £9,000

If you have often been attracted by the prospects of a career as a Sales Professional within the Data Processing industry but the prospects of cold-calling have always deterred you, this could be the opportunity you've been looking for.

Our client is about to embark on an exciting expansion programme with the opening of direct retail centres marketing a complete range of electronic office equipment, including micro-computers and word processors, "off the shelf".

This represents an excellent opportunity for alert, technically minded professionals who wish to enter and develop their experience of technical marketing in a direct sales environment, backed by a first-class product range and support.

Ideally, applicants should possess an awareness of business systems and practices together with a broad knowledge of the mini/micro market. Experience of sales support would be a distinct asset.

With the increasing demands being placed upon technological advancement by both the private and business sectors, this is the first phase of our client's ambitious expansion plan, and consequently career prospects will be geared to personal ambition and achievement. A full range of company benefits including Pension Scheme and Life Assurance accompany this exciting opportunity.

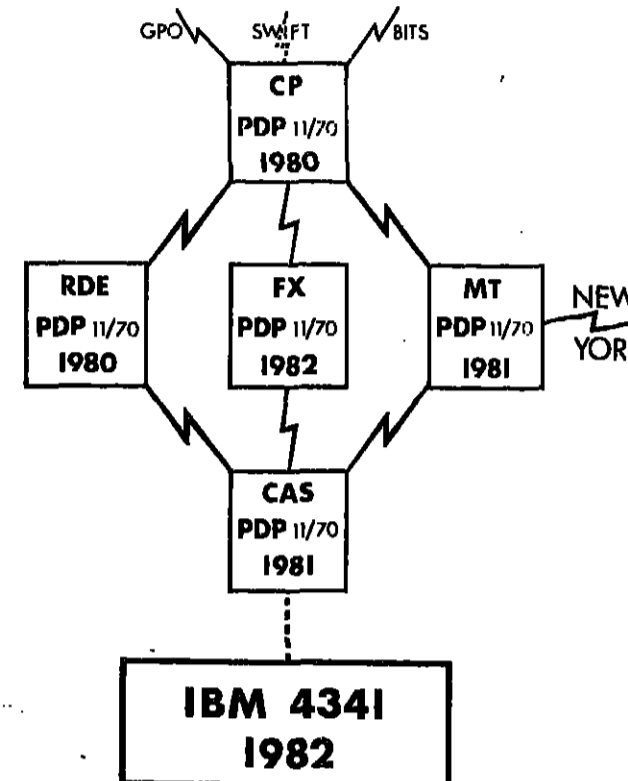
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The Systems' Architecture, as outlined

- * Will run under RSX11 - M
- * Involves a Real Time Interactive TP Network
- * Interfaces with foreign Banking networks

It is essential that candidates have a thorough knowledge of REAL TIME INTERACTIVE SYSTEMS DESIGN. However, preference will be given to those who possess experience in a number of the following:

- * RSX11 - M
- * FORTRAN
- * MACRO - 11
- * BANKING
- * BASIC + 2
- * MANAGEMENT POTENTIAL

For those with potential, a very impressive career progression is available

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MICROCOMPUTER SOFTWARE PROGRAMMER

HANTS OR LONDON, SEI
c £10,000

This is an unusual opportunity to join a small, dynamic software team, and to

- design, code, test and implement with IMMEDIATE VISIBLE RESULTS
- have plenty of variety, including hands on experimental work, real-time applications, system software, graphics, text and word processing.
- use your initiative and creative skills.
- play a significant part in a software development, as a leading member of the specialist group.

The opening will interest bright systems programmers with around five years' experience, including substantial Assembly on minis, micros or mainframes.

Our clients are an expanding, entrepreneurial electronics design/manufacturing company. You could be based either in a small, attractive East Hampshire town or at the London office near Waterloo.

Valuable fringe benefits include a Company profit-oriented bonus scheme, and assistance with property deposit and relocation costs, where applicable.

Please ring us in confidence for a discussion, quoting ref. 324, or leave a message on our answering machine after hours.



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KING ALFRED'S COLLEGE
WINCHESTER

COMPUTER MANAGER

Applications are invited for this new position in the recently established Computer Centre. The successful candidate will be responsible for the day-to-day management of computer facilities supporting the College's teaching and academic research activities.

The major facility is a 256 Kbytes DEC PDP 11/34 system running under RSX11 using BASIC + and FORTRAN IV. Additionally, a range of Cromemco, PET and RM380Z microcomputers are also provided.

The appointment will be made within the scale £6,535 to £7,077 (under review).

Further details may be obtained from the Bursar, King Alfred's College, Winchester SO22 4NB. Tel No. Winchester 62281.

Closing date for applications is 13th October, 1980.

(2004)

UNIVERSITY OF GLASGOW
ADMINISTRATIVE DATA
PROCESSING GROUP
DATA PROCESSING
CONTROLLER

Applicants are invited from graduates or other suitably qualified persons for the post of DATA PROCESSING CONTROLLER responsible for the administration of student records for the University of Glasgow. The successful candidate will be responsible for the day-to-day management of the data processing system, including the operation of the system, the preparation of reports, and the maintenance of the system. The successful candidate will be responsible for the day-to-day management of the data processing system, including the operation of the system, the preparation of reports, and the maintenance of the system.



IBM
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CMS COBOL Analyst / Programmers

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UNIVAC V77 Consultants
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Programmers
Burroughs COBOL DMS 2
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ANALYSTS
Commercial Systems Analyst
with distributed processing
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-in South Wales and Avon,
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-or mail the coupon.

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Computer People Midlands

PROGRAMMER
£6,000 to £7,000 LEICESTER C463
Minimum of 2 years' COBOL programming experience preferably on IBM hardware. Training offered for on-line applications.

PROGRAMMER
£6,000 to £6,500 NOTTS C464
Minimum of 2 years' COBOL programming experience preferably on ICL 2900/1900 series. Maintenance and development distributive systems.

PROGRAMMER
£6/7k BEDFORDSHIRE C465
COBOL or PL1 programming with some experience of CICS. IBM hardware.

PROGRAMMERS
£ Neg. LEICESTER C466
Experienced in COBOL programming on Mini and Micro hardware. Commercial applications. Bureau environment.

PROGRAMMER
£5k to £6.5k LINCOLNSHIRE C467
A minimum of 2 years' COBOL programming. Knowledge of IBM hardware, CICS and IDMS would be advantageous. Commercial environment.

PROGRAMMER/ANALYST
£ Neg. NORTHAMPTON C468
Minimum of 2 years' experience of RPG II programming with some analysis. IBM System 3. Manufacturing environment.
Consultant: Roger Carr.

CUSTOMER SUPPORT
Up to £8,000 BRISTOL W298
Pre-sales support, installation and post-sales support for company's application package products. Minimum 2 years' experience using Basic or Basic+2 on DEC PDP11s working on commercial systems.

ANALYST/PROGRAMMERS
Up to £8,000 BRISTOL W297
At least 2 years' experience using Basic or Basic+2 on DEC PDP11s working on commercial systems.

ANALYST/PROGRAMMER
£ Neg. WARKS W296
Minimum 2 years' experience COBOL programming preferably on IBM equipment.

PROGRAMMER
£6,000+ HEREFORDSHIRE W294
2 years' experience Basic programming — to work on Data general equipment.

PROGRAMMER
£ Neg. WILTS W293
Minimum 3 years' Assembler on IBM equipment. Commercial applications, some on-line work.

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Up to £9,500 WARKS W299
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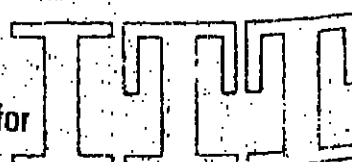
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(2993)

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(2987)

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(3011)

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U-E-A

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Male or female candidates should contact Patrick Convey, quoting reference number CW 285.

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Following considerable gradual expansion, our Client, a market leader in mini and micro business systems, need to strengthen their existing support teams. Responsible for particular customer installations you will provide full pre and post sales support, client liaison and on-site implementation.

A thorough understanding of business problems, an outgoing personality and an eye for detail are essential qualities. Your background will include 3 years commercial system design and analysis, preferably in a turnkey or software house environment and in depth knowledge of COBOL or BASIC.

Support Programmers

£6,000 + Car + bonus

Our Clients programming teams also need strengthening in both locations. A minimum of 18 months COBOL or BASIC on a mainframe or mini, on applications such as accounts, payroll and sales are the essential qualities sought. You will be on-site the majority of the time though some in house package development may be involved. An excellent bonus scheme operates for both positions plus an attractive range of fringe benefits.

Contact: Brian Postle

Senior Systems Analysts

Central London To £11,500

This is an excellent opportunity to join a rapidly expanding international organisation operating in all field services. The company is just embarking on an eighteen month plan to re-centralise its data processing and to re-develop all its systems on IBM System 31's. Applicants must be well educated and should possess at least three years systems analysts experience, ideally gained in a financial environment. The ability to plan and control projects together with a background in business systems development would be a definite advantage.

These openings are London based but there will be opportunities to travel internationally. Contact: Jim Baker

Senior Programmer

Middx. £10,000

This multi-national industrial organisation need an experienced person for one of their specialist divisions, who are currently developing various commercial systems on mini and micro computers, also on IBM 3033, with plans to use an IBM 8100 mini-computer and colour graphic screens/printers.

Applications range from order processing to on-line personnel management information. It is essential to be an accomplished COBOL programmer from an IBM environment, with exposure to CICS and IMS.

Experience in the development or enhancement of one major system and the ability to control staff, would be a definite advantage. The company can offer good career prospects, an excellent salary and fringe benefits.

Contact: Janet Chivers

Sales Support

Central London to £10,000

This internationally recognised hardware manufacturer, is looking for experienced Analysts/Programmers from a financial organisation, to join a team of highly professional people servicing the banking world.

A minimum of two years COBOL programming from a relevant environment, with exposure to users/clients problems and requirements is essential. Involvement in the enhancement or development of one major system would be a definite advantage. The Company offer interesting and varied career prospects coupled with a good salary package, and the usual fringe benefits associated with a large organisation.

Contact: Isabel Bruce

Programmers—Real Time Systems

Hampshire up to £10,000

This is an excellent opportunity to join the Systems Group of a recognised transnational organisation which undertakes the design, manufacture and commissioning of (training) simulators and industrial monitoring and control systems.

A minimum of three years experience of working on real-time industrial or military systems is essential. Candidates should preferably have a degree in Computing or Electronic Engineering and ideally a knowledge of PDP11 with experience of MACRO11 and RSX11. Salary will be negotiable according to age and experience and the usual range of large company benefits including a generous relocation package will be offered. There will be some opportunities for international travel.

Contact: Isabel Bruce

Computer Manager

Central London to £9,000

Our client, a small publishing company in the West End wish to appoint a Computer Manager to lead a team of 3 running an ICL 2903 site. They are using a real time sales and distribution system which uses database type techniques.

The position would suit a Senior Analyst/Programmer who wishes to move into a more senior role. Candidates should have a knowledge of RPGII and possibly ICL's Application Manager but the latter is not essential.

Although development work at the moment is not active the successful candidate will have to co-ordinate the installation of a new machine which is planned for early 1982. Salary is negotiable according to relevant experience.

Contact: David Hendry

Programmers

City to £9,000 + free season ticket

Our client is a system house and subsidiary of well established Insurance Brokers. As DEC OEM's they provide a comprehensive range of facilities which include purpose designed software for financial/insurance applications based on PDP11 under RT11. In line with constant growth they are now seeking programmers to be involved at the inception stage of some extremely innovative projects.

Applicants will preferably have spent at least two years in the d.p. industry, ideally in a financial environment, should have in-depth knowledge of ASSEMBLER so as to make an immediate contribution in a development role. Personality will be an important factor as you will be dealing with people at all levels both internally and externally. Excellent opportunity to progress in an interesting and professional environment.

Contact: Margaret Stevens

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data scene

COBOL PROGRAMMERS

HERTS c. £7,000

A European based company whose products are sold world wide seek COBOL Programmers for their ICL 2904 installation.

Candidates should be aged between 20 and 35 and have a minimum of 12 months programming experience, which may have been gained on any hardware.

The applications cover most standard financial work encompassing both development and maintenance.

In return the company offers a good salary, B.U.P.A., non-contributory pension and life assurance. D.4694

BASIC + /BASIC + 2 PROGRAMMERS

CITY £7500

We are in contact with three banks in the city who are seeking programmers with upwards of eighteen months experience in BASIC + BASIC + 2, or AIMS. Successful applicants can expect to be working in a batch and real-time environment on applications such as foreign exchange and Eurobonds. Opportunities for career progression are excellent and the employment packages offered are without equal. R/GEN

SALES SUPPORT CONSULTANT

N. LONDON to £8,500 + car

Our client is a well known service company associated with the construction industry who seek a sales support Consultant.

The successful applicant will be well spoken, of good appearance and have at least three years' in depth IBM experience of either programming or systems analysis. The position is technical and office based but with a strong emphasis on client liaison.

They offer a salary of up to £8,500, a company car and 5 weeks annual leave. D.4595

ANALYST/PROGRAMMERS

ESSEX to £8500

If you are strong in Systems Analysis and would enjoy working in a real-time or on-line environment in addition to batch applications there are vacancies with two of our clients in the Essex area. A programming background in COBOL and a knowledge of UNIVAC 9830 or HONEYWELL L64 would be appropriate. Both companies offer a comprehensive range of benefits. R/4674/5

RPG II or COBOL PROGRAMMERS

E. LONDON C. £6900

A member of the stock exchange requires programmers for their IBM 4341 installation.

The company use both RPG (for batch processing) and COBOL and candidates will ideally, have a knowledge of both.

A minimum of 18 months experience as required. Experience of C.I.C.S. would be advantageous though not necessary. The applications are financial. The salary totalling £6900 is supplemented by luncheon vouchers and company loans. D.4686

ANALYST/PROGRAMMER

SW LONDON £8500

A well known toy company are expanding their Data Processing Department and require an experienced Analyst/Programmer to complement their existing team. DEC hardware is used and a background of COBOL or BASIC would be particularly appropriate. Successful applicants, who should ideally have 3-4 years' experience, can expect to work on a variety of applications and utilise their skills to the full. Generous company benefits are offered. R.4613

ANALYSTS/PROGRAMMERS

S. HAMPSHIRE to £8500

A leading supplier of electrical appliances require both programmers and analyst programmers for their IBM 3031 installation.

Applicants should have at least 18 months experience of either commercial or scientific applications, using COBOL. Analysts should additionally have completed at least one project to implementation. A knowledge of C.I.C.S. and DLI would be a bonus.

As well as a good salary the company offers a subsidised restaurant; and staff shop. D.4640

COBOL PROGRAMMERS

MIDDX. £6-£8000

Several clients in the Middx. area seek COBOL Programmers. A wide range of application areas is involved using either HONEYWELL or UNIVAC equipment. We would like to hear from programmers with upwards of eighteen months experience especially those with Data Base or On-Line experience to discuss opportunities within the foods, aircraft and other industries. R.4625

The above vacancies are only a small selection from those currently on our files and we are always delighted to talk to experienced systems and programming staff wishing to further their careers. (2088)

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An Assistant is required to the Data Processing Manager of ICL 2904 Installation with ESO50 and 7502 System. Experience of systems work and/or programming is essential.

Applications which will be treated in confidence should be addressed to the Personnel Manager, Diamond H Controls Ltd., Vulcan Road, North, Norwich NR8 5AH. (2689)

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To find out more about this new opportunity please call Sue Blundell or write to her at the address below.

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COMPUTER WEEKLY

OCTOBER 30, 1980

RECRUITMENT & EDUCATION SUPPLEMENT

the most informative publication of its kind in the UK

In spite of rising unemployment the computer industry continues in its demand for a regular supply of qualified computer people. As the market expands, so does the need for new skills and abilities. Although more and more training facilities are available, the chronic shortage of manpower remains, causing a major problem for all companies involved with computers.

Our annual Computer Weekly recruitment and education supplement, especially planned to coincide with and be available at Compec '80 — Britain's biggest computer exhibition — will be packed full of valuable information covering the whole spectrum of the computer job market. Editorial contribution will be substantial, appealing to data processing professionals, as well as the next generation of young people who will be required to take up the

challenge and share in the achievements of the next decade and beyond.

This years supplement will be published on October 30 and distributed in the normal way to all Computer Weekly readers. Copies will also be available to visitors from the Computer Weekly stand at Compec. Last year, some 34,745 visitors attended the exhibition.

The supplement is a unique publication, being the only newspaper of its kind produced in the U.K. dealing specifically with the subject of careers and job opportunities for DP personnel. The combination of the supplement's extensive editorial support, the large circulation, and Computer Weekly's standing in the industry, means this supplement is a must for recruitment advertisers.

Computer Weekly has the largest circulation in the specialist computer press (91,656 ABC July-Dec 1979). This has increased continually over the years to reflect the ever growing number of personnel in the computer industry. Additionally, and equally important, the newspaper has the highest number of individually requested copies of any weekly computer publication.

For further details regarding the supplement and the special Compec free computerised recruitment service, contact your nearest Computer Weekly Classified Office: London: 01-261 8028/8019/8174/8097. Manchester: 061-872 8861. Birmingham: 021-356 4838.

COMPUTER WEEKLY

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Lecturer-Computer Software

Without sophisticated and highly reliable software, modern avionics systems, based as they are on firmware technology and digital signal processing techniques, could be neither designed nor operated.

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In this, our Airborne Software Division plays a crucial role. It is also responsible for much of the training in software techniques and programming which is needed in a company such as ours.

The Division now seeks an additional Software Lecturer to provide courses in programming techniques and microprocessor applications for our software engineers and other specialists.

Part of a small team based at Borehamwood, the man or woman we appoint will be involved in all aspects of

our training courses, from the writing of syllabuses to the delivery of lectures. Considerable practical knowledge of programming, preferably gained within an industrial environment, is prerequisite, and previous experience of teaching or lecturing would be an advantage.

As a member of staff in Europe's major avionics company, the person appointed to this position may expect a highly competitive salary and other benefits commensurate with the seniority of this post. These will include relocation expenses where appropriate and, under certain circumstances, assistance with local authority housing.

For further details, please telephone, or write, to Chris Hill, Marconi Avionics Ltd., Elstree Way, Borehamwood, Herts. Tel: 01-953 2030 ext 3449. Alternatively telephone 01-207 3455 anytime. Please quote reference MA80/43.

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E. SURREY	2 yrs commercial systems	£8,000
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If you are interested in the above positions, please phone for an Application Form or write giving full details.

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THE SALES BIT

Redundancy — your rights as an employee

TO MOST employees the Employment Protection Act is a piece of industrial legislation that only becomes known to them when they suddenly realise they no longer have a job. To many it is a total oblivion that follows them to the door.

My interest primarily rests with salesmen and technical support people, but the topics I shall be covering in this series of articles on employment protection embrace anyone with the job title "employee".

The loss of employment usually occurs as a result of redundancy, dismissal or death. Let us first of all investigate the former.

Onus

Redundancy is generally defined by the Act as a dismissal attributable wholly or mainly to the fact that the employer has ceased or intends to cease the operation of the business within which the employee was employed, or has ceased or intends to cease the operation of that business in the location where the employee was so employed.

A state of redundancy may also be declared when the employee is no longer required to carry out a particular kind of work, or to carry out such work in a particular place. Redundancy therefore typically occurs when a company relocates or suffers a setback in business necessitating a reduction in the workforce.

However, in circumstances where the justification for redundancy is based on reducing the workforce for a particular kind of work, the onus is on the employer to make it clear that the nature of the work or workload has changed, rather than the standard the employer expects the employee to meet.

In cases where the working hours are re-arranged, say, in order to reduce costs by cutting down the amount of overtime worked, employees who refuse to accept such an arrangement cannot be classified as redundant so long as the total number of employees of that kind is not reduced as a direct consequence.

Alternatives

Often the cessation or reduction of requirements for people of a particular job function can result in an offer of alternative work or different terms of employment. In this case, the employee is entitled to a four-week trial period. If this involves re-training, then the trial period can be extended by written agreement between the parties. This must specify the date on which the trial period ends and the terms and conditions that will subsequently apply.

If during this trial period the employer or employee gives notice to terminate the arrangement, then the employee will be treated as having been dismissed for the reason originally stated, ie normal redundancy.

Any employee who refuses an offer of alternative employment or resigns during any

such a trial period will not be entitled to any redundancy payment, if his or her refusal or resignation is shown to be unreasonable. However, in the circumstances of an industrial tribunal it is the responsibility of the employer to establish the fact that the alternative work was suitable and the employee's rejection unreasonable.

Change

The change of ownership of a company usually creates a degree of insecurity among employees and sometimes the possibility of redundancy is contemplated as a consequence. Certainly an employee is not entitled to any kind of redundancy payment as a direct result of change of ownership. However, in the event of a redundancy situation at a later date, the whole of the employee's service, including that with the previous owner, must be taken into account when calculating redundancy payment. This is the total responsibility of the new owner.

Employees will not be entitled to redundancy payment if they unreasonably refuse an offer by the new owner to re-engage them on the same terms as before, without any break in employment. This also applies when the employer offers to re-engage them on different terms, provided the offer is made prior to the change in ownership, the offer is suited to the employee and any break in employment does not exceed four weeks.

Next week I shall be discussing possible events during the period of redundancy notice and the actual calculation of redundancy payment.

TRADER

CONFERENCES

Computer aided drafting

A CONFERENCE to be held in London on November 17 will assess geometric modelling and computer aided drafting. Organised by Oyez International Business Communications, the conference is aimed at those concerned with structural design. The conference will examine the use of a 3D geometric model in a turnkey CAD/CAM system. A slide presentation of a turnkey system embodying these principles will also be given. For further information, telephone Mallery Barker on 01-242 2481.

Two conferences are to be held in conjunction with the Video Trax Exhibition. Organised by Normedia and Link House Publications, the conference will be held at the Wembley Conference Centre. On November 18, the conference theme is Information Storage and Retrieval (ISR) and on November 19, Video Assisted Instruction (VAI) will be the subject. For further information, telephone Suzanne Sims of Normedia on 01-629 9381.

A three-day Infotech Briefing is to be held at the Kensington Close Hotel London from November 25-27. The briefing aims to provide potential purchasers and industry consultants with impartial advice on evaluation and selection of a small business computer. The event will include analysis of micro-based systems costing up to £12,000 and a review of specialist small business computer suppliers and general purpose suppliers of systems up to £70,000. For further information contact Tony Barber on

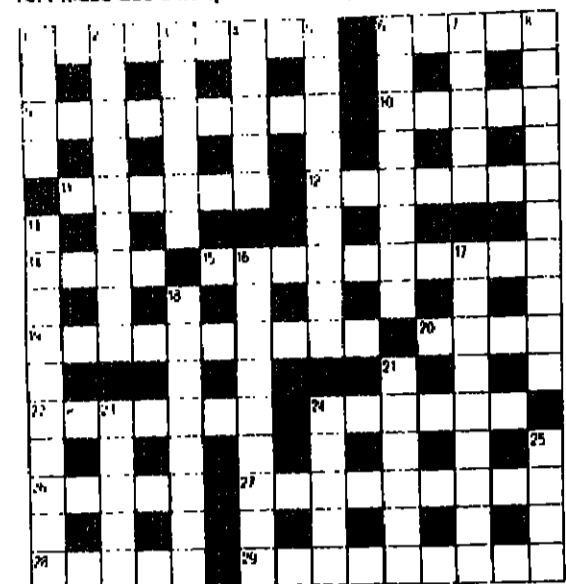
Puzzle Answer

THE only possible answer is $2^2 + 11^2 = 5^2$. (If the integers need not be different, $2^2 + 2^2$

CW Prize Crossword 9

Compiled by Alec Robins

A prize of £10 will be awarded for the first correct entry opened. The second and third solutions opened will receive £5 each. Entries to Crossword Competition, Computer Weekly, Dorset House, Stamford Street, London SE1 9LU, by first post Friday, October 10. Please use a ballpoint to complete the crossword.



Name: (Miss, Mrs, Ms, Mr)

Address:

Telephone:

I accept the rules and conditions of the Computer Weekly Crossword Competition.

Signed: Date:

ACROSS

1. Sound of cold winds in southern hills (9)
6. It's a bird - shoot it (5)
9. Burglar having quips with servant (9)
10. Some of you rivalise, being backward, a love of fine arts (5)
11. Courtesy is the order in a large town (6)
12. Scholar left after everyone else, providing a scolding influence (7)
14. Reassembling, in a heroic with diplomacy, in a calm obedience (4,4,3)
19. 20. With death imminent, makes amends with various past gals (2,4,4,4)
22. Legislation that brings about a reverse for a member of the UK (4-3)
24. This chap's beginning to twist the wanderer's return (6)
26. Aci boastfully, playing against a relative (5)
27. To delay a definite commitment, tries poem out (9)
28. Bound work absorbed by revolutionary... (5)
29. ...who after throttling ambassador, is sent down (9)

DOWN

1. A pile of hay for the bird (4)
2. Lover thanks Italian one turning up with a ring (9)
3. Admit cheat (4,2)
4. This game's odd - dear me! (5)
5. Children straddling big winding road for larks, perhaps (9)
6. What you're out of when you're out? (8)
7. Warm garment in which Dad protects chest (5)
8. Behaving in character, a mixture of petty and out (4,2,4)
13. The interval about finished, shoot out from concealment (5,5)
16. What good arguments and buckets do? (4,5)
17. One who dissects something very small - it's twirling (9)
18. Punctured? What such a tyre is, in actual fact (8)
21. Take ages to become a member (6)
23. Serious fall in business depressed area quickly (5)
24. Eastern language; the reverse of dull, attracting the Italian (5)
25. Nurse, it's a finish (4)

RULES AND CONDITIONS

1. Each competitor may submit no more than one entry.
2. The competition is open to all readers of Computer Weekly with the exception of the staff of IPC Business Press Ltd, any printers employed by them, or the near relatives of any such staff.
3. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.
4. Winners will receive their prizes during the month following the competition.
5. The decision of the editor on the interpretation of the rules and conditions and on all matters shall be final. No correspondence will be entered into.

COMPUTER WEEKLY CLASSIFIED

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Analyst-Programmers

Saudi Arabia c. £11,000 tax free

Required for the telephone Extension Project, which is operated and maintained by Bell Canada. Applicants must have at least 1 year's programming experience using COBOL, have JCL experience using MVS JFS 2 and knowledge of IBM 360. Will be required to code and test complex programs, assist in the development of systems feasibility, design programming and maintenance.

The positions are based in Riyadh. 12 year bachelor status contracts will be offered, including free furnished accommodation, car, medical cover and 20 days paid U.K. leave every six months.

Telephone for an application form, quoting ref. no. 61, to Gordon Newby, Lonsdale Recruitment Limited, International Recruitment Consultants, Lonsdale House, 36 Great Smith St., London SW1P 3BU. Tel: 01-222 1677.

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CAN YOU HANDLE AN ON-LINE SYSTEM?

Thames Valley Police are looking for an experienced Senior Programmer to perform development and maintenance work on a computer on-line system. A challenging series of extensions to this system and to associated IDS batch programmes is envisaged.

The successful applicant will have extensive COBOL experience on an on-line system, preferably but not exclusively with Honeywell 6000/level 68 using IDS and YDS. He/She must be willing to take an increasing interest in the maintenance of existing software, and development of future systems, and be capable of working to rigid standards. He/She will also have the ability to communicate at all levels.

Over 5 weeks' holiday, pension scheme, assistance towards removal expenses.

Application form and further particulars from: The Principal Personnel Officer, Thames Valley Police Headquarters, Kidlington, Oxfordshire OX5 2NX (Telephone Kidlington 4343, ext. 287).

London Borough of Hounslow Hounslow Borough College

SENIOR LECTURER

required to take charge of computing and data processing. The successful applicant should be able to teach programming in BASIC and COBOL and computer operations and to supervise work experience programmes.

Salary: £8,982-£11,295 plus L.W. £408

Further particulars and application form from the Principal, Hounslow Borough College, London Road, Isleworth TW7 4HS, on receipt of a S.A.E. Closing date 14 days from the appearance of the advertisement.

Recruitment LOGISTIX in Informatics

Financial Designers

City: Salary to £12K

A major Financial Institution based in the City is seeking to recruit additional Financial Designers. Candidates must be self-motivated, personally presentable and have the ability to liaise with Users and Consultants at all levels. It is essential to have at least three years' Banking or Insurance experience and to be familiar with Foreign Exchange, Eurobonds, Premium Receipts or Portfolio Management/Investment.

Candidates who have worked within a multi-computer based distributed processing environment will be particularly favoured. As a member of a small project team comprising Systems/Business Analysts and Programmers you will be involved in the development and implementation of new systems for both the City Offices and its European counterparts. Ref: L/40/A

Real-Time Applications

Pennine Counties: Salary to £10K

A foremost Total Systems Supplier has an urgent requirement for Analyst/Programmers and Project Leaders to join either its Customer Support or Software Development teams. Analyst/Programmers should possess at least 2 years' Basic+ or Assembler programming experience gained on any leading mini or micro-computer. Additionally, successful

candidates will be expected to offer at least 12 months analysis of either technical or commercial systems. Project Leaders should have a similar background supplemented by actual or potential management ability. Location is unlikely to be a limiting factor as the company is well served by road and rail facilities. Ref: L/40/B

Microprocessor Engineers

Switzerland: Salaries to £15K (equivalent)

Our client has a justifiably enviable reputation as a Semi-conductor Equipment Supplier. Its manufacturing and software development Headquarters is situated near Zurich. We have an exclusive assignment to recruit several Software Development Engineers to join the Company's permanent staff. Emphasis will be placed on technical achievement and in-depth industrial/practical experience. A Bachelor or Masters Degree in Electronics, Electrical Engineering or Computer Sciences is a desirable asset. Additionally, all candidates must offer a minimum of four years' microprocessor software development. There is a preference for those fully familiar with Motorola 6800 hardware and software, although, of course, respondents will be considered who have had in-depth ex-

perience with Intel 8085/8, Zilog Z80/Z800 or Fairchild Systems Software. It is preferable to offer some German language ability for social-cultural reasons, as much as for the working environment. Of prime importance is a real enthusiasm to relocate to Switzerland for a minimum period of 2 years. Every assistance will be given in relocation including the cost of removal of all personal effects and the provision of temporary accommodation until such time as you are settled in a permanent apartment. Our client offers an above-average salary together with an unrivalled range of ancillary fringe benefits. Initial screening interviews will take place in London after which short listed candidates will spend one day at the Company's premises. Ref: L/40/C

Micro Support

Central London: Salaries to £8K + Car

Our client is a leading Micro-Computer Manufacturer based in Central London. The rapid increase in sales of its Business Systems has created vacancies for additional Micro Service Engineers and Software Support Programmers to maintain and enhance its reputation for outstanding post-sales hardware and software support. As a Micro Service Engineer you will support the increasing customer base of microcomputer systems and terminal products. Full training will be given to young, ambitious engineers with an in-depth

knowledge of Electronic Engineering and Microprocessor techniques. Software Support Programmers should offer at least one year's BASIC or PASCAL programming experience on any mini or preferably microcomputer. In addition to a sound Software programming background, interest in Personal Computing will be a distinct advantage. For all positions, candidates must demonstrate the ability to liaise with customers and solve any problems which may arise both quickly and professionally. Ref: L/40/D

H. P. Scientific Programmers

Netherlands: Salary to £16K

Fluency in FORTRAN, gained from continuous exposure to scientific applications for a minimum of 3 years, is the prime requirement of our client. During this period, candidates will preferably have been exposed to Hewlett-Packard 21MX, 1800/3600 series hardware in an on-line environment. Since the company is one of

the leading Continental Total Systems Suppliers, suitable applicants will currently be employed by a similarly successful company. Applications areas include graphics, signal processing, flight control path analysis. Those working for military or process control orientated companies will therefore be of particular interest. Ref: L/40/E

Process Control Programmers

Greater and Inner London: Salary to £10K

A leading supplier of Industrial Processing and Control Systems with London-based Headquarters and a Manchester regional office is seeking to recruit Programmers with one to five years' Programming and Systems experience. All applicants should offer at least one year's post-graduate programming experience in ASSEMBLER, PASCAL or BASIC, preferably in a real-time environment. Whilst it is not essential

for candidates to have a micro background, preference will be shown to those able to demonstrate involvement with Intel, Zilog, Motorola or Ferranti based systems. There is a possibility of secondment, if desired, to the Company's German office for short or long-term assignments. Salaries offered will, naturally, reflect the experience and potential of applicants but will certainly be generous. Ref: L/40/F

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ANALYST/PROGRAMMER

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EXPERIENCE

3 years 1208 6400 EDS6.
Some systems design.
Ideally a banking background.
Preferred ages 25-30.

Candidates who wish to apply for this position should write or telephone for an application form (quoting reference MW2) to the address shown.

OS/MVS OPERATIONS

N. KENT

c. £7,500

Our clients, a leading financial company, will soon be upgrading their hardware and will be running under OS MVS. To assist with this conversion they wish to recruit an experienced operator/programmer. Applicants should have 3 years' knowledge of OS JCL and be fully conversant with OS MVS. The selected candidate will initially be involved with the training of operations staff. Five DAYS ONLY position offers excellent working conditions and attractive financial benefits. Ref: B4354

COMPUTER OPERATOR

SOUTH LONDON

c.£6,000

A well known company in its own field have asked us to assist with the recruitment of a computer operator. Applicants for this position should have gained a minimum of two years' (CL 2980 under VME/3) experience with DME experience will also be considered. This is an ideal opportunity for someone who wishes to progress within operations. A two shift system is in operation. Benefits include pension scheme, free meals. Ref: M4173

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We are seeking experienced Operators for contract work. The successful candidate will be required to work on a variety of projects, including system analysis, programming, and testing. The position offers a competitive salary and benefits package. Ref: M4173

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A major American mini manufacturer is launching a field service organisation from scratch to support its activities in London and Home Counties. This could be your opportunity to gain experience on a wide range of prestige minis and their applications, whilst enjoying the prospects only offered by a new venture like this. Start at £7,500 + car + overtime + benefits. If you are a service/customer engineer with good academic background, computer experience, live in one of the above locations, then take a big stride forward to an exciting career by calling today. Cons. Ref. 2238. (2929)

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